PJM | DE | DC | IL | IN | KY | MD | MI | NJ | NC | OH | PA | TN | VA | WV

Section 3.5: Generation Interconnection Activities

3.5.1 – A Proven Generation Interconnection Process

The PJM transmission system provides the means for delivering the output of interconnected generators to load centers for end-use customer consumption. To that end, each LSE within PJM must own or acquire capacity resources to meet its respective capacity obligation. LSEs can acquire capacity resources by entering into bilateral agreements, by participating in the PJM-operated Capacity Credit Market or by owning generation. PJM's successful generator interconnection process continues to ensure that new capacity resources which satisfy LSE obligations, do so reliably. That process includes the following:

- Complete process coordination from point-of-first contact to day-one commercial operation
- Feasibility, System Impact and Facility studies, progressively more refined
- Trilateral Interconnection Service Agreement and Construction Service Agreement execution and implementation
- New facility construction oversight

PJM's queue-based, 3-study interconnection process offers developers the flexibility to consider and explore, cost effectively, possible interconnection opportunities. While a developer can withdraw at any point, the process has been structured in such a way that each step imposes its own increasing financial obligations on the developer and establishes milestone responsibilities for developer, PJM and impacted TOs. In this manner, PJM's interconnection process encompasses more sound, consistent and reliable planning, minimizing retooling studies.

PJM's FERC-approved process also ensures that generation is deliverable, identifying the transmission facility capability needed to meet a one-day-in-ten-years loss-of-load expectation standard across PJM. Doing so establishes capacity rights for a given generating project. Unlike other ISO/RTOs, once such rights are established, no further future deliverability studies are required to maintain capacity status.

NOTE

PJM's generator interconnection process complies with FERC's Order 888 (addressing interconnection procedures and agreements), Order 2003 (addressing Large Generators) and Order 2006 (addressing small generators). Compliance filings for Order 661 and Order 661-A both addressing wind-powered generating projects) are presently pending before the FERC.

16,000+ MW in Service, 3500+ MW Under Construction, 20,000+ MW Under Study

PJM's robust energy market has attracted numerous requests from generation developers – both traditional utility players and non-utility entities – seeking interconnection to the PJM transmission system. These generator interconnection requests constitute a significant driver of regional transmission expansion needs. **Table 3.5.1-1** contains the status of generator interconnection requests in each PJM queue shown graphically in **Figure 3.5.1-1**. PJM's RTEP, through December 31, 2005, includes those upgrades for generator interconnections in Queues A through N. The necessary Feasibility and System Impact Studies for requests in Queues O and P began in December 2005.

Table 3.5.1-1: PJM Generator Interconnection Request Queue Activity

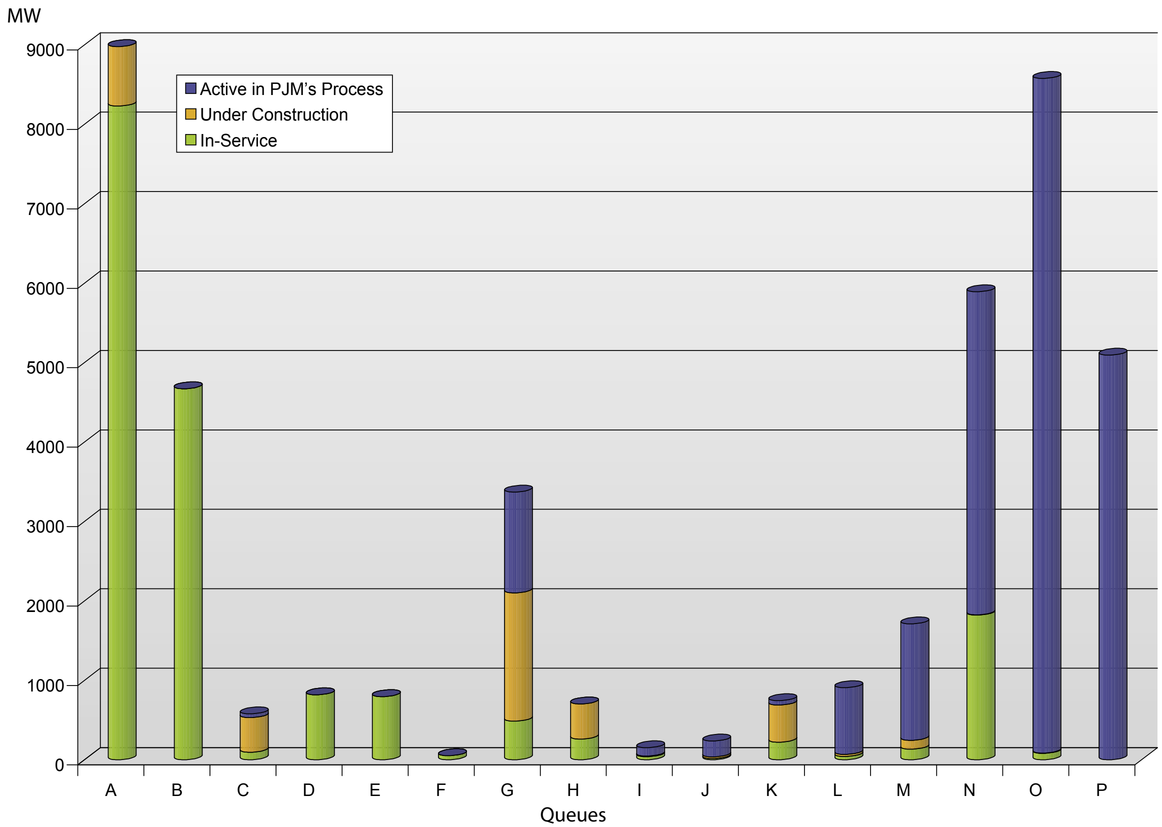
Queue	Window	Active		Under Construction		In-Service *		Withdrawn		Total Requests	
	(close date)	MW	# of Projects	MW	# of Projects	MW	# of Projects	MW	# of Projects	MW	# of Projects
A	4/15/1999	0	0	1,259	1	7,653	27	18,145	34	27,057	62
B	11/30/1999	0	0	7	0	4,531	20	15,882	41	20,420	61
C	3/31/2000	47	1	436	1	27	2	4,104	20	4,614	24
D	7/31/2000	0	0	0	0	716	13	7,603	22	8,319	35
E	11/30/2000	0	0	0	0	795	8	17,637	38	18,432	46
F	1/31/2001	0	0	0	0	52	3	3,093	7	3,145	10
G	7/31/2001	1,270	3	674	1	337	19	21,293	53	23,574	76
H	1/31/2002	0	0	540	3	163	9	8,422	24	9,125	36
I	7/31/2002	105	3	8	1	37	4	4,863	16	5,013	24
J	1/31/2003	200	1	22	1	14	2	707	7	943	11
K	7/31/2003	55	3	473	6	219	10	2,068	14	2,815	33
L	1/31/2004	840	6	27	2	40	5	3,383	15	4,290	28
M	7/31/2004	1,465	8	112	2	88	4	2,930	11	4,595	25
N	1/31/2005	4,675	28	4	1	1,809	7	3,269	16	9,757	52
O	7/31/2005	7,164	56	3	1	81	4	662	3	7,910	64
P	1/31/2006	9,168	54	0	0	0	0	60	3	9,228	25
TOTAL		24,989	163	3,565	20	16,562	137	114,121	324	159,237	612

* Total MW requested is not the sum of the four columns preceding it as it reflects the actual total MW requested and does not change once a queue closes. In-service MW does and can change to account for units that are phased into commercial operation. Data Valid as of 1/31/2006, the close of Queue 'P'..

NOTE

While withdrawn projects appear to make up a significant portion of the total interconnection requests that pass through PJM's interconnection process, the numbers simply reflect ongoing business decisions by developers in response to changing industry, economic and other competitive factors. PJM's queue-based, 3-study interconnection process offers developers the flexibility to consider and explore, cost-effectively, possible interconnection opportunities.

Figure 3.5.1-1: Status of interconnection Requests in Each Queue



Since its inception in 1997, PJM has queued more than 150,000 MW of generation interconnection requests. Over 16,000 MW of new generating resources representing over 130 projects have been brought online, as accommodated by some $ 533 million of network and attachment facility upgrades, as shown in **Table 3.5.1-2**. More than 3,500 MW of new generating resources are presently under construction with over 24,000 MW participating actively in PJM's interconnection process. These generation additions enhance system reliability, supply adequacy and competitive markets for PJM's market participants and the customers they serve. Because these generation additions are funded through non-rate base mechanisms, true market forces drive the development of such generation.

Table 3.5.1-2: Summary of Upgrade Costs to Accommodate Generator Interconnection Requests

	In-service	Under Construction	Engineering / Under Study	TOTALS
Network Upgrade Costs	$109 M	$1 M	$75 M	$185 M
Attachment Upgrade Costs	$199 M	$72 M	$77 M	$348 M
TOTALS	$308 M	$73M	$152M	$ 533 M

3.5.2 – Fuel Mix of Generators Requesting Interconnection

Importantly, new generating resources requesting interconnection cover the spectrum of fuel types, including natural gas, wind, coal, nuclear, gas, oil and hydro. Nonetheless, comparing PJM's existing fuel mix, as shown in **Figure 3.5.2-1**, with the fuel mix of queue-based generator interconnection requests, as shown in **Figure 3.5.2-2**, reflects the emergence of generation development experienced in the industry at large as a result of similar system drivers:

- Availability and price of natural gas
- Federal energy policy regarding economic incentives for wind-powered generation.
- Energy and Capacity market economics of general plant enhancements and life extension of existing plants including nuclear and coal based plants
- Emerging environmental legislative and regulatory trends regarding, NO_x, SO_x and CO_2 emissions

Figure 3.5.2-1: Fuel Mix of Existing PJM Installed Generating Capacity (12/31/05)

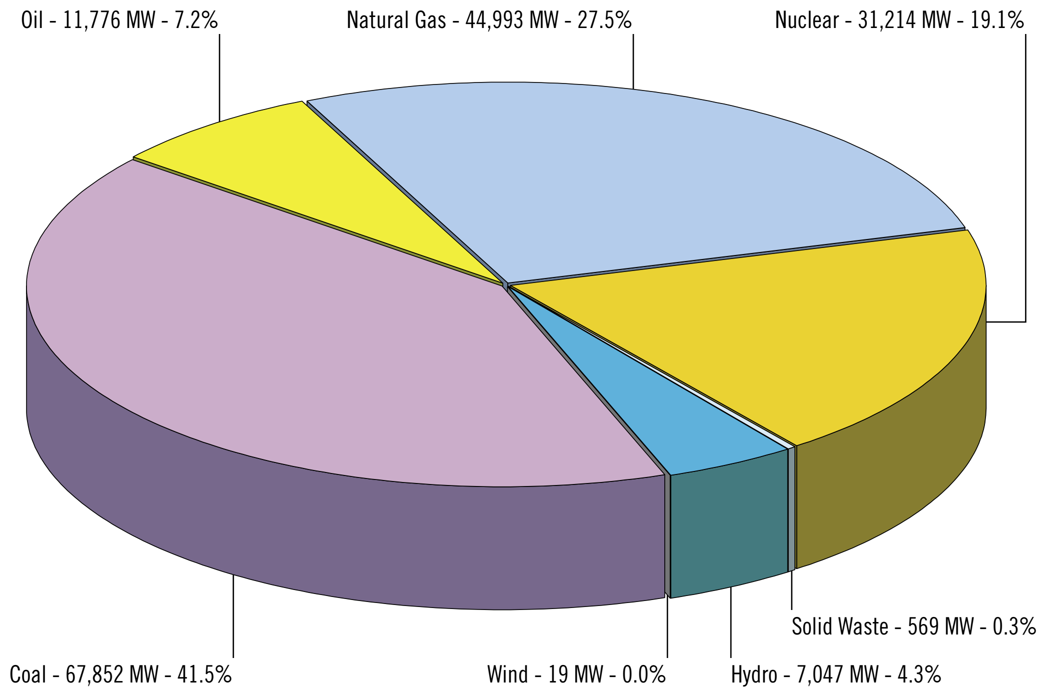
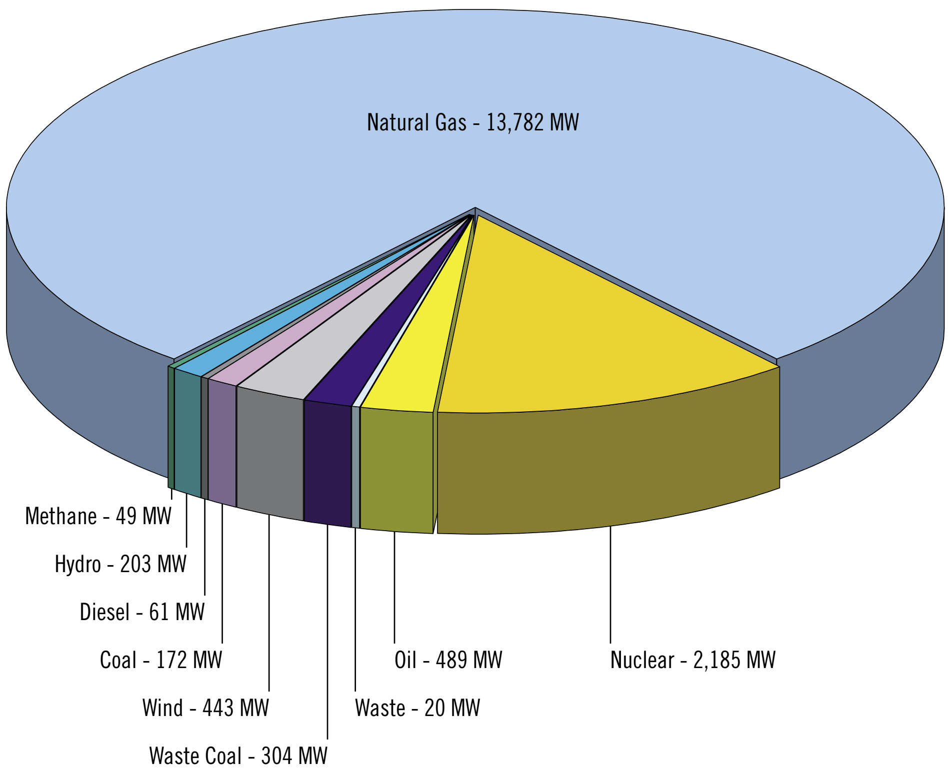


Figure 3.5.2-2: Fuel Mix of Queued Generation Interconnection Requests in PJM



PJM RTEP Process scenario planning has been expanded to include sensitivity analyses to explore PJM susceptibility to fuel availability disruptions. Taking such proactive planning steps now helps PJM mitigate to the extent possible potential threats in future years. **Section 5** of this report discusses this issue further and PJM's actions taken to date.

NOTE

The 2,185 MW of nuclear based generation is comprised of one unit electrically moved into PJM, as well as upgrades to existing nuclear generating units within PJM.

3.5.3 – Generator Interconnection Request Process

Interconnection request analysis encompasses, firstly, establishment of baseline system improvements based on a defined five-year planning model including all pertinent forecasted loads and known electrical system upgrades anticipated during the interim five years. Subsequent, separate queue-defined, cluster-based impact studies are analyzed against this baseline. Study analyses include a Feasibility Study, Impact Study, and Facilities Study, as shown in the flow chart in **Figure 3.5.3-1**. Each step imposes its own increasing financial obligations on the developer, PJM and impacted TOs. Part IV of the PJM Open Access Transmission Tariff (OATT) codifies the study phase (and all phases) of the interconnection process. The PJM M14 series of Manuals describes the generator interconnection process in detail. Both PJM's OATT and Manuals can be found on www.pjm.com.

A developer initiates the interconnection process by submitting an Interconnection Request in the form of an OATT Attachment N Feasibility Study Agreement. Execution of that Agreement requires the specification of certain plant data and information – including energy and/or capacity status sought – needed for PJM to continue with the necessary Planning studies. After a completed Generation Interconnection Feasibility Study Agreement and study deposit are received, PJM assigns a team leader to initiate and direct the implementation of the study phases of the Generator Interconnection Process.

Figure 3.5.3-1: Generation Interconnection Process Summary Flow Chart

Generation Interconnection Feasibility Study	System Impact Study	Facilities Study
The Generation Interconnection Feasibility Study assesses the practicality and cost for a developer to interconnect a new generating resource into the PJM transmission system or increase the output from an existing resource. The analysis is limited to short-circuit studies and load-flow analysis of probable contingencies, per NERC-defined reliability standards. A Feasibility Study does not include stability analysis. The study also focuses on determining preliminary estimates of the type, scope, cost and lead time for construction of facilities required to interconnect the project to the grid and to ensure that generation is deliverable (to the extent capacity status is requested).	The System Impact Study provides a regional analysis that is another degree more comprehensive and detailed than Feasibility Analysis in order to assess the impact of adding a new generation facility to the PJM transmission system or increase the output from an existing resource. This analysis includes NERC-defined stability analysis as well as an evaluation of impact on deliverability to PJM load in the particular PJM region where the generating resource is to be located. This study identifies system constraints that arise from the addition of the project and enumerates the necessary attachment facilities, local upgrades and network upgrades required for reliable interconnection. The study refines and more comprehensively estimates cost responsibility and construction lead times for facilities and upgrades.	The Generation Interconnection Facilities Study encompasses the engineering design work necessary to begin construction of any required transmission facilities. This study also provides a good-faith estimate of the cost for attachment facilities, local upgrades and network upgrades necessary to accommodate the project and an estimate of the time required to complete detailed design and construction of the facilities and upgrades.
1	2	3

3.5.4 – Integrating Emerging Trends

Wind-Powered Generation Projects
Queued wind-powered generation projects generally follow the broader generation interconnection process. However, because of the intermittent nature of wind-power generation, a specific procedure is required to determine an appropriate capacity value for wind generator output. Further, the use of induction-type generators for wind-powered projects requires the application of specific reactive power requirements. These are addressed in more detail in Section 3.6 of this report.

Behind The Meter Generation Projects
Behind The Meter Generation (BTM) refers to one or more generating units that are located with load at a single electrical location such that no transmission or distribution facilities owned or operated by any Transmission Owner or Electric Distributor are used to deliver energy from such generating units to load. Any BTM unit that desires to be designated, in whole or in part, as a Capacity Resource or Energy Resource must submit a Generation Interconnection Request.

Interconnection Service Agreement (ISA) Execution

Following completion of the study phase, PJM, developer and all impacted TOs proceed with ISA execution. The ISA defines developer obligations regarding cost responsibility for required transmission system upgrades. The ISA also confers the rights associated with the interconnection of a generator as a capacity resource and any operational restrictions or other limitations on which those rights depend. PJM may also include other reasonable milestone dates for events such as permitting, regulatory certifications or third-party financial arrangements.

4

Construction Service Agreement (CSA) Execution

The terms and conditions of a CSA govern the construction of all transmission facilities to interconnect a new generating resource to the PJM transmission system. A CSA also governs any network upgrades to ensure generator output is fully deliverable. A CSA is executed among PJM, the developer and all impacted TOs. A developer retains the right, but not the obligation ("Option to Build"), to design, procure, construct and install all or any portion of the Transmission Owner Interconnection Facilities.

NOTE: Further information on all terms and conditions to be incorporated and made part of each ISA and CSA may be found in Part IV of the PJM Open Access Transmission Tariff and PJM's M14 series of Manuals, both available on the PJM Web site, www.pjm.com.

5

Construction and Implementation

Following execution of the requisite ISA and CSA, the project moves into construction phase, overseen by a PJM-assigned team leader. The team leader oversees facility construction and verification of all necessary facilities to accommodate the interconnection request.

6

PJM DE DC IL IN KY MD MI NJ NC OH PA TN VA WV

Section 3.6: Wind-powered Generating Resources

3.6.1 – Resource Development in PJM

The development of wind generation is a significant component of U.S. national energy policy goals for clean and renewable energy resources. The Federal Government in recent years has encouraged the development of these facilities by passing legislation that included provisions for Production Tax Credits (PTCs) for wind-powered facilities. Implementation of wind-powered generation facilities, however, presents its own planning and operational challenges not the least of which is the intermittent nature of wind, which affects the operational availability of wind-powered generators. In turn, this impacts a wind-farm facility's ability to secure capacity rights that can impact a developer's ability to secure financing.

Wind Generation Project Clusters within PJM

Wind-powered generation projects by their very nature prefer geographic areas with favorable wind characteristics including speed, duration patterns and frequency of occurrence. Several such areas within PJM have emerged, as shown in **Map 3.6.1-1**. As shown in **Figure 3.6.1-1**, more than 8,400 MWs of wind generation are under development in PJM's interconnection queue process and nearly 900 MW are under construction.

Northern Illinois

In northern Illinois, PJM's interconnection queues contain 5,169 MW of active wind generation development projects with another 318 MW under construction.

West Virginia

In West Virginia, PJM's interconnection queues contain 1,140 MW of active wind generation development projects with 360 MW under construction.

Western Maryland

In Maryland, PJM's interconnection queues contain 88 MW of active wind generation development projects generally located in the mountainous area of western Maryland with 120 MW under construction.

West-Central Pennsylvania

In west-central Pennsylvania, PJM's interconnection queues contain 1,156 MW of active wind generation development projects with none presently under construction.

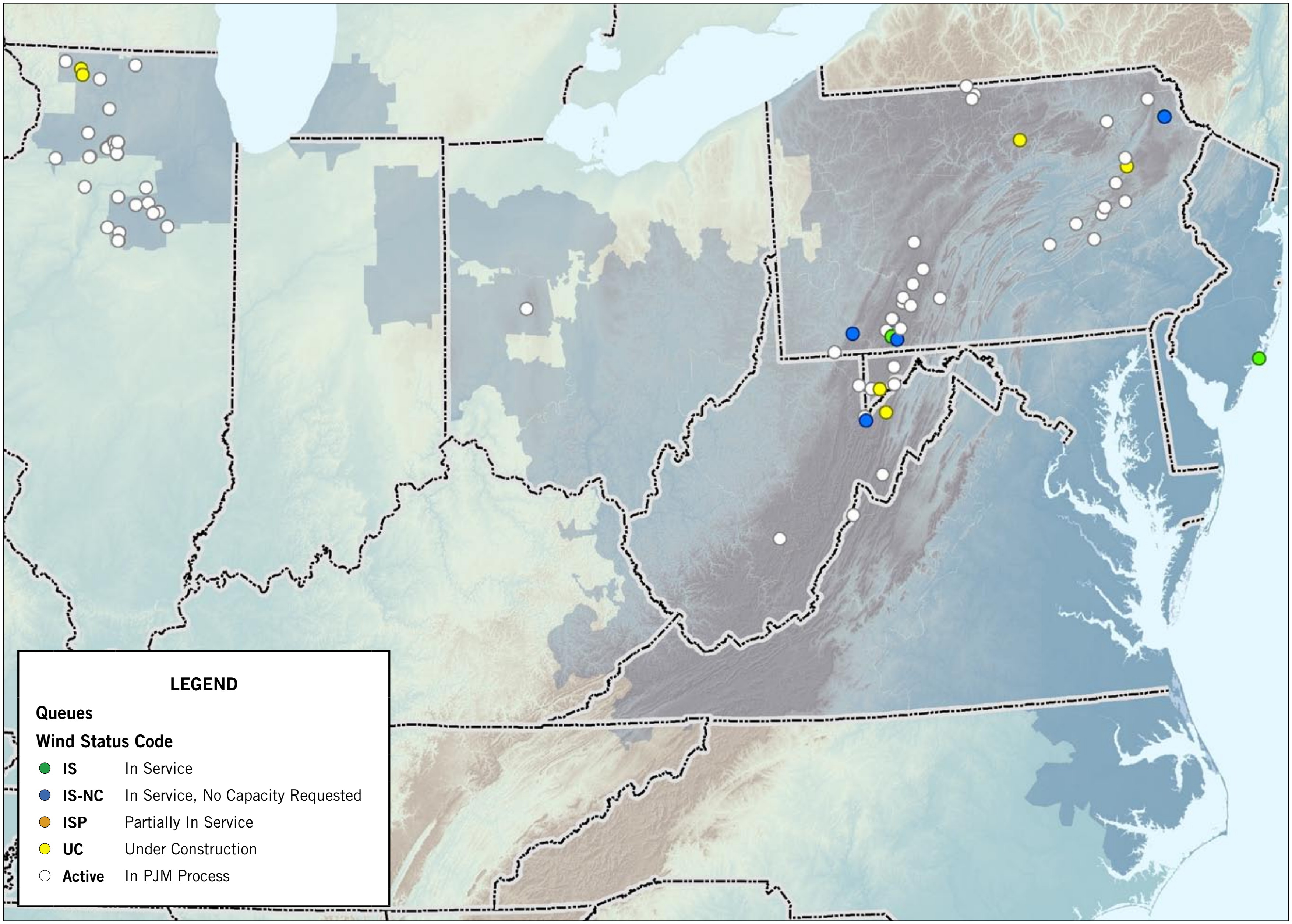
Northeastern Pennsylvania

In northeastern Pennsylvania, PJM's interconnection queues contain 1,146 MW of active wind generation development projects with 96 MW under construction.

Wind Projects in other Areas of PJM

PJM is currently tracking the development of an additional 167 MW of active wind generation development projects throughout the rest of PJM none are presently under construction.

Map 3.6.1-1: Clustered Locations of Wind-Powered Generation Projects in PJM

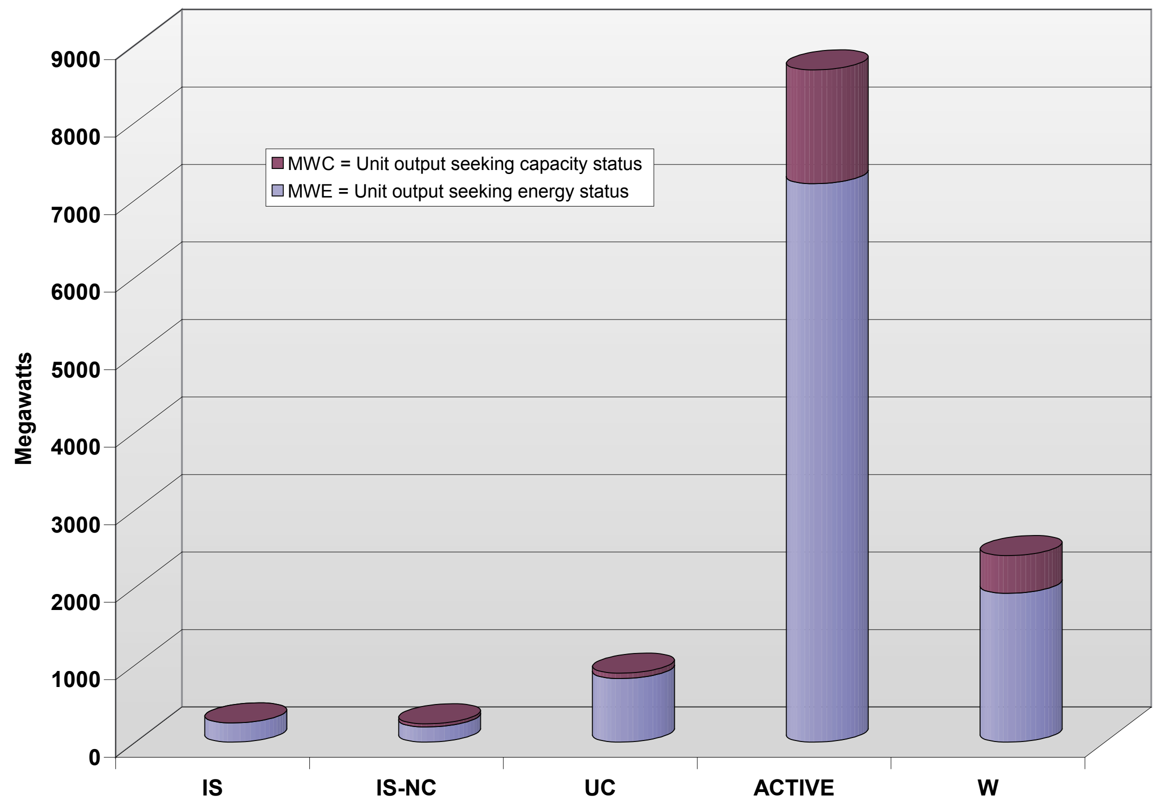


3.6.2 – Integrating Wind-Powered Generating Resources in RTO Functions

PJM's RTO planning, markets and operations functions have addressed many of the unique challenges faced by wind generation developers in other areas of the United States. One primary example, based on the intermittent nature of wind power generation, has been the development of a specific procedure to determine an appropriate capacity value for wind generator output to allow it to participate in PJM's Capacity Market. Prior to developing that procedure, wind projects could not participate in the Capacity Market.

PJM has demonstrated that the unique attributes of small projects can be recognized within the PJM process and legitimate technical differences can be accommodated.

Figure 3.6.1-1: Status of Wind-Powered Generation Interconnection Requests in PJM



IS	In Service
IS-NC	In Service, No Capacity Requested
UC	Under Construction
Active	In PJM Process
W	Withdrawn

PJM Addresses Wind-Powered Generation Capacity Value

Because of the intermittent nature of wind-powered generation, PJM has developed a specific procedure to determine an appropriate capacity value for wind generator output. The capacity value for an intermittent capacity resource represents that amount of generating capacity that it can reliably contribute during summer peak hours and which can be traded as unforced capacity credits in PJM capacity markets.

The capacity factor for an intermittent capacity resource is a factor based on 3+ years historical operating data and/or the class average capacity factor (initially set at 20% absent initial operating history), and is used in the calculation of that intermittent capacity resource's capacity value.

Full details of the PJM procedures for calculating capacity credits for wind farms are found in PJM Manual 21 "Rules and Procedures for Determination of Generating Capability" that is available on the PJM Web site at www.pjm.com.

Reactive Requirements

Language in PJM's OATT (presently before the FERC in compliance with FERC Orders 661 and 661-A) sets forth the power factor design criteria for all generation interconnecting to the PJM transmission system, including for wind generation facilities. Large and small wind generation and other non-synchronous generation must meet specified power factor requirements.

PJM DE DC IL IN KY MD MI NJ NC OH PA TN VA WV

Section 3.7: Merchant Transmission Interconnection Activities

3.7.1 – Merchant Transmission Process Offers Opportunity

The continuing evolution and growth of PJM's robust and competitive regional market rests on a foundation of bulk power delivery for system reliability, ensuring PJM's ongoing ability to meet all regional load-serving obligations. PJM's FERC-approved Regional Transmission Expansion Planning (RTEP) Process preserves this foundation through independent analysis and recommendation.

PJM's planning process expanded in March 2003 to include merchant transmission in response to a recognized need. Since March 2003, PJM's expanded process has offered opportunities to parties interested in building transmission as a business opportunity based on identified system needs to resolve baseline transmission reliability issues; to mitigate facility constraints that result in unhedgeable congestion; or to address specific generator interconnection issues.

Table 3.7.2-1: Merchant Transmission Interconnection Request Queue Activity

Queue	Project Name	MW	Type	Status	Schedule	TO
G07_MTX1	Sayreville 230 kV	790	DC	UC	Jun-07	JCPL
G22_MTX5	Linden 230 kV	300	VFT	UC	Apr-07	PSEG
J02_MTX13	Keeney Transformer 230/138 kV		AC	IS	May-03	Delmarva
J07_MTX12	Cheswold Transformer 138/69 kV		AC	IS	Dec-03	Delmarva
M05	Black Oak - Bedington		AC	ACTIVE	Dec-05	AP
O06	Ft. Martin Pruntytown		AC	ACTIVE	Feb-06	AP
O13	Linden - Harbor Cable II	520	DC	ACTIVE	Feb-08	PSEG
O14	Black Oak - Bedington RTU		AC	ACTIVE	TBD	AP
O15	Black Oak - Hatfield Wave Trap		AC	ACTIVE	TBD	AP
O16	Chichester-Linwood 230 kV		AC	IS	Jun-05	PECO
O45	Grassy Falls	200	AC	ACTIVE	Sep-06	AP
O66	Bergen 230 kV	670	DC	ACTIVE	Jul-09	PSEG
P12	Cheswick - Springdale 138 kV		AC	ACTIVE	Jun-06	DQE
P29	Hunterstown 500/230 kV			ACTIVE	Jun-06	METED
P31	Bath County			ACTIVE	Jun-06	Dominion
P45_MTX	Mt. Storm 500 kV			ACTIVE	TBD	Dominion
P56	Elrama-Mitchell 138 kV			ACTIVE	Jun-07	DQE
P57	Charleroi-Mitchell 138 kV			ACTIVE	Jun-07	AP

Value of Rights Received Drives Proposed Projects

Merchant transmission facilities may consist of Direct Current (DC) or Alternating Current (AC) facilities. Merchant AC facilities may include free-standing transmission facilities as well as Network Upgrades that are additions or upgrades to or replacements of existing system facilities (for example, a new line on existing transmission towers or a new or upgraded transformer installed in an existing substation). Such network upgrades are not rate-based. Once conveyed to a recipient TO, the merchant TO is compensated only via the relevant transmission related rights associated with the project.

The PJM OATT establishes the transmission-related rights to which merchant transmission developers may be entitled. Incremental Available Transfer Capability Revenue Rights (IATCRR), Incremental Deliverability Rights (IDRs) and Incremental Auction Revenue Rights (IARRs) are made available to projects that satisfy specified PJM requirements including that for transmission system facility enhancements needed to accommodate interconnection.

- IATCRRs are provided to projects that increase the available transfer capability of the transmission system.
- IDRs are provided to projects that create additional deliverability margin that new generation or other transmission users may utilize. IDRs are transferable under separate agreement.
- IARRs are provided to projects just as they are to developers of generation facilities

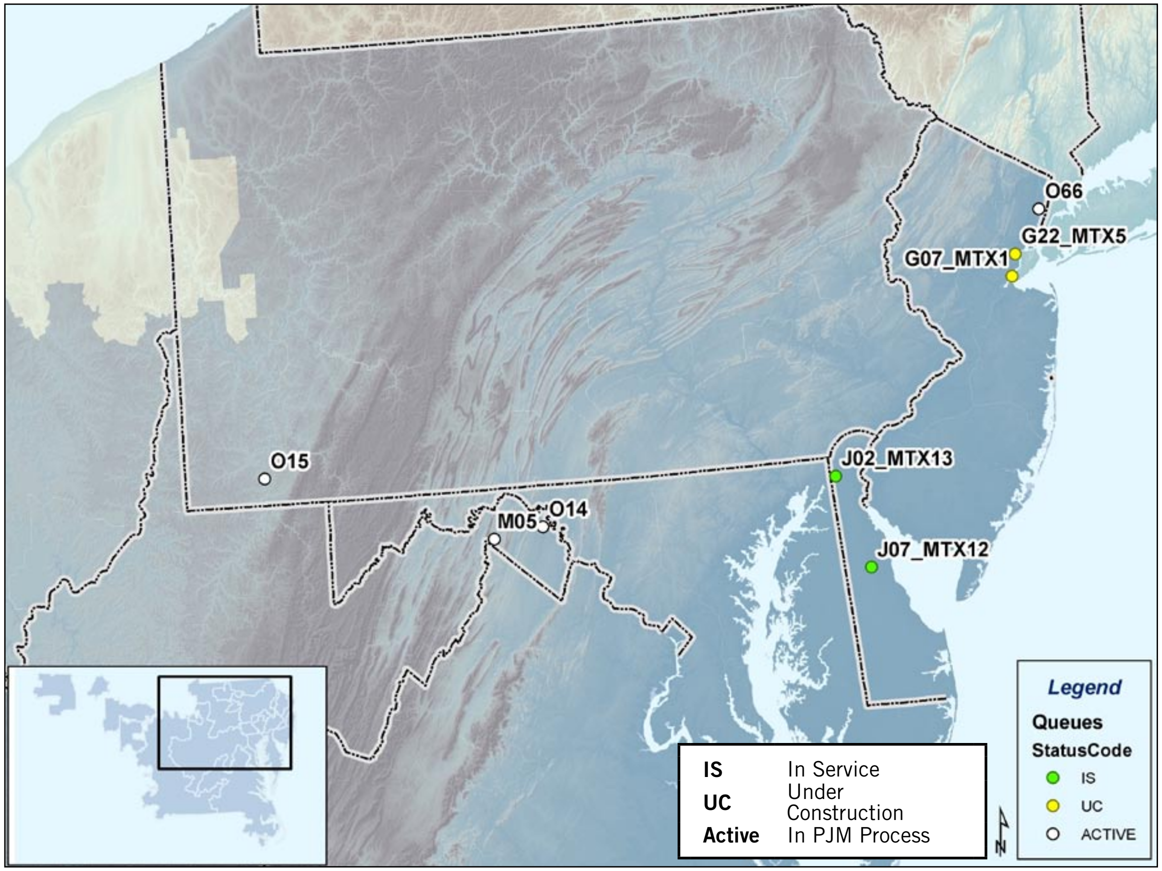
In addition, Merchant DC transmission projects are entitled to the set of rights above, or to an alternative set of rights related to specific injections into or withdrawals from the PJM transmission system. Transmission Injection Rights (TIRs) are available to projects that inject capacity and/or energy into the PJM transmission system from another control area. Similarly, Transmission Withdrawal Rights (TWRs) are available to DC projects that withdraw capacity and/or energy from the PJM transmission system for delivery to another control area.

If a Merchant facility employs a technology such as that associated with Variable Frequency Transformers (VFT) and can demonstrate, in PJM's judgment, continuous controllability similar to that of DC facilities, then such facilities can be ascribed the same election of rights as that for merchant DC facilities.

3.7.2 – Merchant Transmission Proposals to Date

The economic value of the rights described above are driving the emergence of merchant transmission projects within the parameters of PJM's RTEP Process:

Map 3.7.2-1: Location of Queued Merchant Transmission Interconnection Projects within PJM



- Projects at PJM boundaries with adjacent systems involving ISO/RTOs
- Projects to complete identified baseline reliability or economic constraints ahead of schedule
- Projects to upgrade components of existing transmission infrastructure
- Projects to afford wind and other generation projects the opportunity to secure valuable capacity rights by becoming fully deliverable

PJM's robust markets have attracted requests from merchant transmission developers – both traditional utility players and non-utility entities – seeking interconnection to the PJM transmission system. **Table 3.7.2-1** contains merchant transmission interconnection request activity within PJM. **Map 3.7.2-1** shows the location of each project. **Table 3.7.2-2** summarizes the upgrades identified by PJM to ensure reliable merchant transmission interconnection.

Table 3.7.2-2: Transmission System Upgrades Required for Merchant Transmission Interconnection

		System Upgrade Drivers: Baseline Upgrades				System Upgrade Drivers: Network Upgrades		System Upgrade Drivers: TOI Upgrade	System Upgrade Drivers: Transmission Service				
Map Ref.	**Merchant Transmission Facility** / Required Upgrades	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
1	**Sayreville 230 kV**						G07_MTX1			June 2007	$ 2.5 M	JCPL	NJ
	Reconductor Englishtown-Monroe 34.5 kV						G07_MTX1			April 2007	$ 1.2 M	JCPL	NJ
	Reconductor Wyckoff Street-Coke 34.5 kV						G07_MTX1			April 2007	$ 0.96 M	JCPL	NJ
	Addition of a 230 kV breaker at Whippany to alleviate a Morristown transformer overload						G07_MTX1			June 2006	$ 0.394 M	JCPL	NJ
	Add 50Mvar cap at Brunswick 230 kV substation						G07_MTX1			April 2007	$ 2.2 M	PSEG	NJ
	Add 50MVAR capacitor at West Orange 138 kV substation						G07_MTX1			April 2007	$ 1.7 M	PSEG	NJ
2	**Linden 230 kV**						G22_MTX5			April 2007	$ 18 M	PSEG	NJ
	Upgrade Linden - Tosco 230 kV (wavetrap)						G22_MTX5			April 2002	$ 0.1 M	PSEG	NJ
	Upgrade Sewaren - Woodbridge "V" 138 kV (wavetrap)						G22_MTX5			April 2007	$ 0.1 M	PSEG	NJ
	Tap Tosco-Warinanco transmission line						G22_MTX5			July 2007	$ 0.975 M	PSEG	NJ
	Tosco protective relaying						G22_MTX5			July 2007	$ 0.075 M	PSEG	NJ
	Warinanco protective relaying						G22_MTX5			July 2007	$ 0.075 M	PSEG	NJ
	OPGW fiber from Tosco to G22 to Warinanco						G22_MTX5			July 2007	$ 0.075 M	PSEG	NJ
	Install 230 kV 3 breaker ring bus for the VFT						G22_MTX5			July 2007	$ 4.5 M	PSEG	NJ
3	**Keeney Transformer 230/138 kV**						J02_MTX13			May 2003	$ 0.872 M	Delmarva	DE
4	**Cheswold 139/69 kV Transformer Acceleration**						J02_MTX13			December 2003	$ 0.375 M	Delmarva	DE
5	**Black Oak – Bedington 500 kV Circuit**						M05			December 2005	$ 0.080 M	AP	WV
5	**Ft. Martin Pruntytown**						O06			February 2006	$ 0.105 M	AP	WV
7	**Chichester-Linwood 230 kV**						O16			June 2005	$ 0.005 M	PECO	PA

Since its inception in March 2003, 30 projects have been queued as part of PJM's RTEP interconnection process. 12 projects have been withdrawn. 18 are in-service, under construction or actively participating in PJM's interconnection process.

3.7.3 – Merchant Transmission Interconnection Request Process

PJM's merchant transmission interconnection process provides a means by which parties may build new transmission facilities. The interconnection process includes the following:

- Complete process coordination from point-of-first contact to day-one commercial operation
- 3-study interconnection process includes: Feasibility, System Impact and Facility studies, progressively more refined
- Trilateral Interconnection Service Agreement and Construction Service Agreement execution and implementation
- New facility construction oversight

PJM's queue-based, 3-study interconnection process offers developers the flexibility to consider and explore, cost effectively, possible interconnection opportunities. Each step imposes its own increasing financial obligations on the developer and establishes milestone responsibilities for developer, PJM and impacted TOs.

Figure 3.7.3-1: Merchant Transmission Interconnection Process Summary Flow Chart

Transmission Interconnection Feasibility Study

The Transmission Interconnection Feasibility Study assesses the practicality and cost for a developer to interconnect a new transmission facility, upgrade an existing facility or accelerate the completion of an existing proposed upgrade. The analysis is limited to short-circuit studies and load-flow analysis of probable contingencies, per NERC-defined reliability standards. A Feasibility Study does not include stability analysis. The study also focuses on determining preliminary estimates of the type, scope, cost and lead time for construction of facilities required to interconnect the project to the grid and to ensure that capacity and/or energy is deliverable (to the extent Transmission Injection Rights or Transmission Withdrawl Rights are requested).

1

System Impact Study

The System Impact Study provides a regional analysis that is another degree more comprehensive and detailed than Feasibility Analysis in order to assess the impact of adding a new transmission facility, upgrade an existing facility or accelerate the completion of an existing proposed upgrade. This analysis includes NERC-defined stability analysis as well as an evaluation of impact on deliverability to PJM load in the particular PJM region where the facility is to be located. This study identifies system constraints that arise from the addition of the project and enumerates the necessary attachment facilities, local upgrades and network upgrades required for reliable interconnection. The study refines and more comprehensively estimates cost responsibility and construction lead times for facilities and upgrades.

2

Facilities Study

The Transmission Interconnection Facilities Study encompasses the engineering design work necessary to begin construction of any required transmission facilities. This study also provides a good-faith estimate of the cost for attachment facilities, local upgrades and network upgrades necessary to accommodate the project and an estimate of the time required to complete detailed design and construction of the facilities and upgrades.

3

Process Flow

The Merchant Transmission Interconnection Request Process largely parallels that for generation interconnection requests. This ensures that all are treated on an even-footing; indeed, both types of interconnection are analyzed together. Interconnection request analysis encompasses, firstly, establishment of baseline system improvements based on a defined five-year planning model including all pertinent forecasted loads and known electrical system upgrades anticipated during the interim five years. Subsequent, separate queue-defined, cluster-based impact studies are analyzed against this baseline. Study analyses include a Feasibility Study, Impact Study, and Facilities Study, as shown in the flow chart in **Figure 3.7.3-1**. Each step imposes its own increasing financial obligations on the requesting party and establishes milestone responsibilities for developer, PJM and impacted TOs. Part IV of the PJM Open Access Transmission Tariff (OATT) codifies the study phase (and all phases) of the interconnection process.

A developer initiates the interconnection process by submitting an Interconnection Request in the form of an OATT Attachment S Feasibility Study Agreement. Execution of that Agreement requires the specification of certain system data and information needed for PJM to continue with the necessary Planning studies. After a completed Merchant Transmission Interconnection Feasibility Study Agreement and study deposit are received, PJM assigns a team leader to initiate and direct the implementation of the study phases of the Process. The PJM M14 series of Manuals describes the interconnection process in detail. In summary, the interconnection process includes the steps shown in the flow chart in **Figure 3.7.3-1.**

Interconnection Service Agreement (ISA) Execution

Following completion of the study phase, PJM, developer and all impacted TOs proceed with ISA execution. The ISA defines developer obligations regarding cost responsibility for required transmission system upgrades. The ISA also confers the rights associated with the interconnection of a new transmission facility and any operational restrictions or other limitations on which those rights depend. PJM may also include other reasonable milestone dates for events such as permitting, regulatory certifications, or third-party financial arrangements.

4

Construction Service Agreement (CSA) Execution

The terms and conditions of a CSA govern the construction of all transmission facilities, including network upgrades, to interconnect a new transmission resource to the PJM transmission system. A CSA is executed among PJM, the developer and all impacted TOs. A developer retains the right, but not the obligation ("Option to Build"), to design, procure, construct and install all or any portion of the Transmission Owner Interconnection Facilities.

NOTE: Further information on all terms and conditions to be incorporated and made part of each ISA and CSA may be found in Part IV of the PJM Open Access Transmission Tariff and PJM's M14 series of Manuals, both available on the PJM Web site, www.pjm.com.

5

Construction and Implementation

Following execution of the requisite ISA and CSA, the project moves into construction phase, overseen by a PJM-assigned team teader. The team leader oversees facility construction and verification of all necessary facilities to accommodate the interconnection request.

6

PJM DE DC IL IN KY MD MI NJ NC OH PA TN VA WV

Section 3.8: Transmission Owner Initiated (TOI) Upgrades

3.8.1 – PJM's RTEP Encompasses TOI Projects

PJM's RTEP Process provides for the development of transmission system upgrades and enhancements to meet the operational, economic and reliability requirements of PJM customers. This process does not, however, interfere with each individual transmission owner's right to pursue its own identification and construction of facilities for operational, reliability or economic purposes. As such, TOI upgrades are an intrinsic part of each expansion plan as they are coordinated with PJM engineering staff for inclusion in pertinent power flow analyses so that their impact on PJM system conditions can be assessed.

Recent TOI upgrade experience has revealed that the long lead-times required for larger EHV projects can reach to 10 years or more. To that extent, PJM is working with transmission owners to implement joint planning horizons of this duration as well.

3.8.2 – Major EHV TOI Upgrade Projects within PJM

While all transmission owners within PJM's footprint have transmission upgrades of their own planned to some extent, several TOI projects that enhance local backbone transmission capability warrant mention here. They include the following:

- The Pittsburgh 345 kV and 138 kV loops to be installed by Duquesne in western Pennsylvania
- The Wyoming-Jackson Ferry 765 kV Line under construction by AEP in West Virginia and southwestern Virginia.

These facilities will provide the upgrades needed to meet the system requirements identified by the respective local transmission owner responsible for those specific areas.

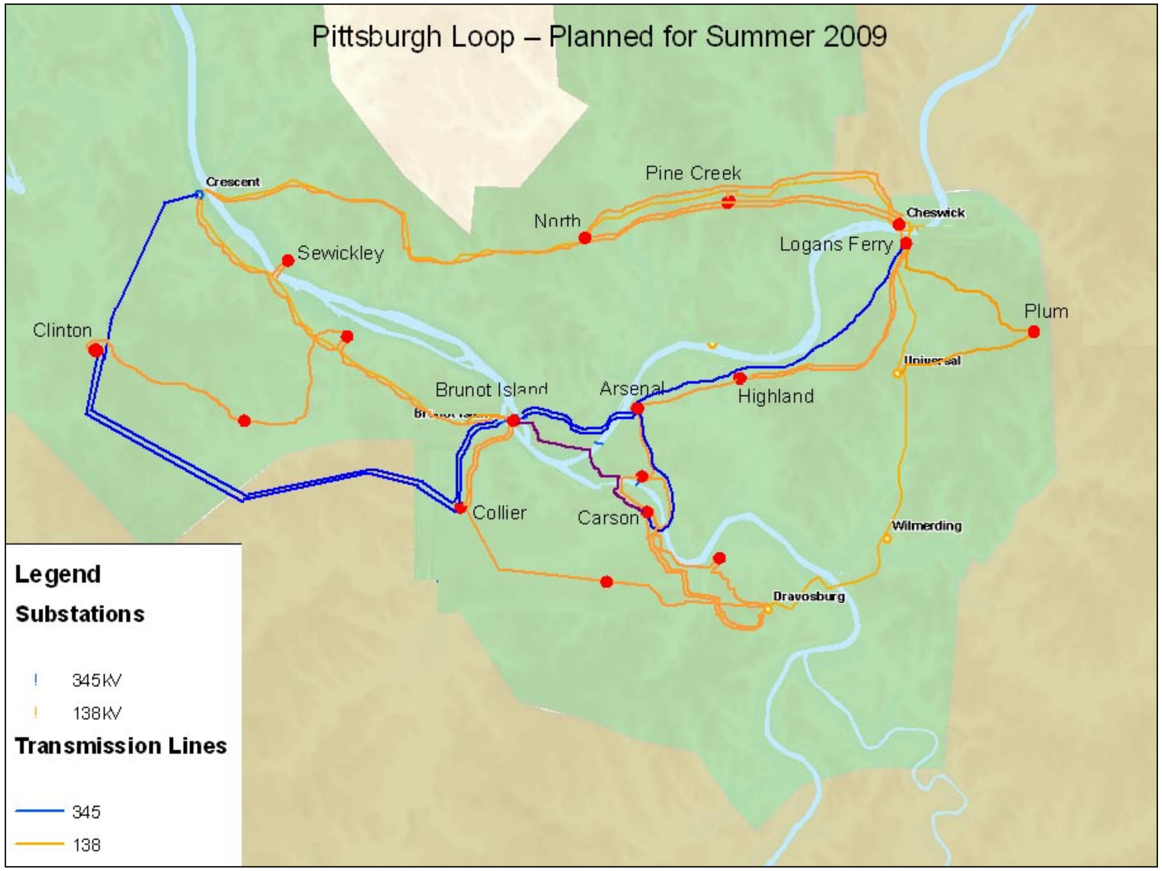
Pittsburgh area 345 kV loop

Duquesne Light Company (DLCO) serves a 705-square-mile area encompassing Allegheny and Beaver Counties in western Pennsylvania, including Pittsburgh, DLCO became a member of PJM on January 1, 2005. The DLCO system was designed to support internal load and not to support the generally west-to-east through-flows across the PJM system. DLCO transmission system includes over 670 circuit miles of facilities at voltages of 69 kV, 138 kV and 345 kV. DLCO determined the need for an infrastructure investment plan to provide long-term support for local load. This plan will accomplish the following:

- Provide upgrades to critical infrastructure to improve the reliability for the City of Pittsburgh and surrounding area,
- Provide an alternative transmission supply to the City of Pittsburgh,
- Provide long-term support for future load growth utilizing 345 kV transmission to enhance access generation resources outside the Pittsburgh area.

The components of this plan, shown in **Map 3.8.2-1**, provide a second independent 345 kV transmission source to metropolitan Pittsburgh as well as conversion of many 69 kV substations to 138 kV supply. Part of DLCO's infrastructure improvement plan over the next few years includes the addition of new underground 345 and 138 kV cables, as well as the upgrading of existing cables. The ultimate goal is to complete a 345 kV loop around Pittsburgh, with 345 kV supplies from Collier and Logans Ferry into Brunot Island and Arsenal Substation, respectively.

Map 3.8.2-1: Pittsburgh Area 345 kV Loop

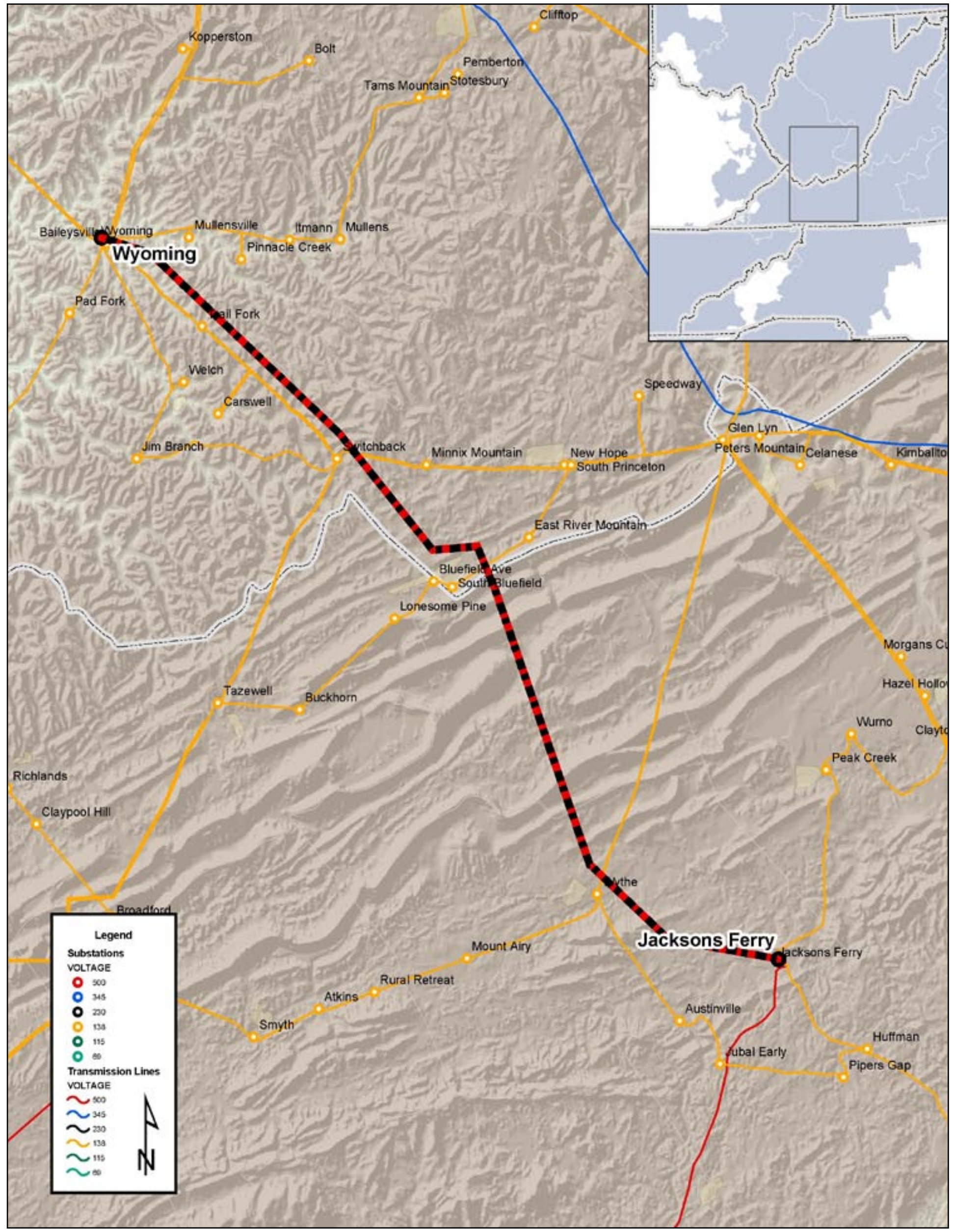


Wyoming-Jackson Ferry 765 kV Line

AEP is constructing a 90-mile 765 kV circuit from its Wyoming 765 kV Station in West Virginia to its Jacksons Ferry 765 kV Station in Virginia, shown in **Map 3.8.2-2**. This line was originally proposed for service in May 1998. Construction of this new line is more than 85% complete (as of January 2006) and the line is expected to be placed in-service by the end of June 2006 and will provide a major enhancement to the PJM backbone transmission system.

This new line is needed to mitigate the thermal overloads and low voltages that could result from the unexpected loss of 765 kV or 500 kV transmission facilities in and around the eastern portion of AEP's service territory. Specifically, growing customer demand in the southeastern portion of the AEP System are causing increased power flows on the transmission network that delivers power into that area from generating resources located to the north. Because of increasing demand, various transmission outages within the AEP System and in neighboring transmission systems could result in unacceptably low voltages and loss of other transmission facilities due to overloading, potentially having negative widespread effects not only within AEP, but also in the service areas of neighboring systems.

Map 3.8.2-2: Wyoming - Jackson's Ferry 765 kV Line



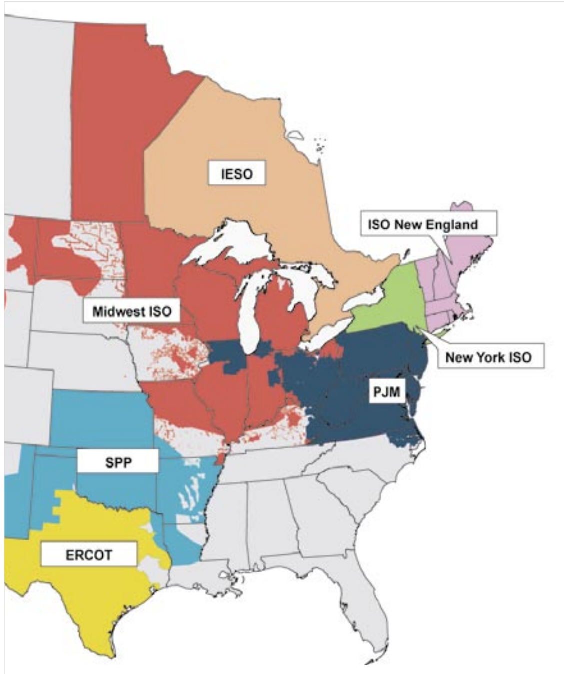
PJM | DE | DC | IL | IN | KY | MD | MI | NJ | NC | OH | PA | TN | VA | WV

Section 3.9: Interregional Planning Activities

3.9.1 – The Value of Interregional Planning

PJM's transmission system includes many key transmission arteries in the U.S. Eastern Interconnection. This provides PJM market participants access not only to PJM's regional power markets but also to those of adjoining systems west, northeast and south of PJM's borders, including Midwest ISO, NY-ISO/ISO-NE and TVA, as shown in **Map 3.9.1-1**.

Map 3.9.1-1: PJM and Neighboring ISO/RTOs



As one of its core RTO functions, PJM manages a sophisticated regional planning process to ensure the continued load-serving reliability of the electric system. Successful implementation of integrated planning takes into account markets and operations on an interregional basis in addition to that within PJM's existing footprint.

Expanding inter-regional markets and system inter-operability require that PJM coordinate integrated system assessments and planning at RTO/ISO transmission interfaces. Missed opportunities to resolve reliability criteria compliance issues could arise absent inter-regional mechanisms to address such issues jointly and proactively. Coupled with FERC-defined policies that require RTOs to develop mechanisms to address inter-regional coordination, PJM has initiated efforts to implement coordination processes with adjoining systems west, northeast and south of PJM as part of its ongoing, evolving single-entity RTEP Process under specific interregional coordination agreements.

3.9.2 – PJM / Midwest ISO Coordinated Planning

Following FERC's RTO directives to develop mechanisms to address inter-regional coordination, PJM and the Midwest ISO executed a Joint Operating Agreement (JOA) in March, 2004 in pursuit of establishing a broader market. As the JOA states, "The primary purpose of coordinated transmission planning and development of [a] coordinated system plan is to ensure that coordinated analyses are performed to identify expansion or enhancements to transmission system capability needed to maintain reliability, improve operational performance or enhance the competitiveness of electricity markets." Overall, the JOA establishes the terms and conditions under which PJM and Midwest ISO coordinate the exchange of data and information and conduct coordinated regional transmission expansion planning.

In 2005, Midwest ISO and PJM approved a scope of work for the 2006 Coordinated System Plan (CSP), presently targeted for August 2006 completion. Activities began in 2005 to develop the 2006 CSP study model - a two-part 2011 peak summer base case system model. Firstly, the power flow model itself includes all generation and merchant transmission interconnection projects with executed ISAs, all associated network upgrades, all other transmission enhancements included in Midwest ISO's and PJM's individual regional transmission expansion plans and all approved long-term firm transactions. Secondly, PJM and Midwest ISO are collaborating on development of 2011 production cost model suitable for evaluating possible future market operations. Using these models as the foundation for analysis, the 2011 study scope includes baseline reliability, generator deliverability, market performance and sensitivity analyses.

Baseline Reliability Analysis

A complete baseline reliability analysis is being performed on the 2011 base system model. The analysis includes the deliverability analysis discussed further below for n-0 and n-1 contingencies. In addition, n-2 contingencies are being studied for transmission facilities of 345 kV and higher.

Generator Deliverability Analysis

Generator deliverability analysis will focus firstly on assessing Midwest ISO generator deliverability to Midwest ISO load and PJM generator deliverability to PJM load in order to identify any cross-border constraints, deliverability impacts of constraints and preliminary solutions to mitigate same. In addition, this analysis will also evaluate the deliverability of combined network resources to a common Midwest ISO/PJM market in order to determine reasonable regions of deliverability, identify network resources deliverable in a common market and identify transmission system constraints and potential preliminary solutions.

Market Performance Analysis

Market Performance Analysis will include a complete market simulation of the combined Midwest ISO/PJM system in order to identify areas of highest LMP spreads and facilities experiencing highest projected congestion. From these results, preliminary solutions will be identified to mitigate these issues.

Sensitivity Analysis

Sensitivity analyses will be performed as required based on the identification of cross-border Midwest ISO/PJM operability issues as identified by both parties over the previous year.

3.9.3 – PJM / NYISIO / ISO-NE Coordinated Planning

Coordinated planning among PJM, ISO-NE and NYISO has been formalized in the "Northeastern ISO/RTO Planning Coordination Protocol," finalized by the parties in December, 2004. Overall, the protocol provides a vehicle for enhanced coordination of planning throughout the Northeast to aid in the resolution of inter-area seams issues. The IMO, HQ and New Brunswick, while not formal parties to the Protocol, intend to participate on a limited basis. The Protocol contains a number of initiatives to improve coordinated planning, including establishment of procedures for data and information exchange, coordination of interconnection requests likely to have cross-border impacts, analysis of firm transmission service requests likely to have cross-border impacts and development of a Northeast Coordinated System Plan (NCSP).

The 2005 NCSP, the final draft of which was published April 6, 2005, provides a solid first step toward greater coordinated planning. Specifically, the 2005 NCSP consolidated the transmission expansion plans of each party and highlighted existing interregional planning initiatives.

Begun in mid-2005, the 2006 NCSP is slated for completion by Summer 2006 and is to address fuel diversity, resource adequacy, transmission adequacy and where necessary propose solutions to mitigate constraints. Finally, the 2006 NCSP will explore and summarize environmental issues and their potential impact in inter-area planning, markets and operations. The study is exploring fuel diversity issues from the perspective of natural gas availability and transport, with recommendations for future fuel diversity studies as well. Resource adequacy studies are exploring loss-of-load risk for the three northeast ISO/RTOs for 2011 with a focus on inter-area tie capabilities. Transmission adequacy studies are addressing loss-of-source analyses, unit retirements, Lake Erie circulation and inter-area oscillations. Pertinent environmental issues are being summarized from the perspective of air emission regulations, renewable portfolio standards and the Regional Greenhouse Gas Initiative.

3.9.4 – PJM / TVA Coordinated Planning

Given PJM's recent market integration activities, PJM's footprint will adjoin additional systems to the south of Dominion and AEP, including the Tennessee Valley Authority (TVA). PJM is presently in discussions with TVA to explore joint efforts to pursue interregional assessments and interregional plan development. To date, TVA has expressed interest in data sharing and planning assessments. PJM will pursue data sharing and planning assessments with TVA with the goal of establishing a JOA similar to that of the PJM/Midwest ISO JOA, tailored to address TVA's specific jurisdictional and organizational issues.

3.9.5 – Integrating Interregional Results into PJM's RTEP

The intent of the interregional coordinated planning is to have PJM and each ISO/RTO include proposed upgrades into respective transmission expansion plans, consistent with the terms and conditions of each system's Open Access Transmission Tariff. Generally speaking, if a system cannot secure approval and/or construction of interregional plan elements, parties may reevaluate plans to develop alternative recommendations, resolve disputes or pursue other remedies specified in individual coordination agreements.

Section 4: State by State RTEP Overviews

PJM | DE | DC | IL | IN | KY | MD | MI | NJ | NC | OH | PA | TN | VA | WV

4.0.1 – PJM Overview

PJM Interconnection is a regional transmission organization (RTO) that coordinates the movement of wholesale electricity in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. **Map 4.0.1-1** shows the PJM footprint overlaid with the PJM high voltage backbone electrical transmission system.

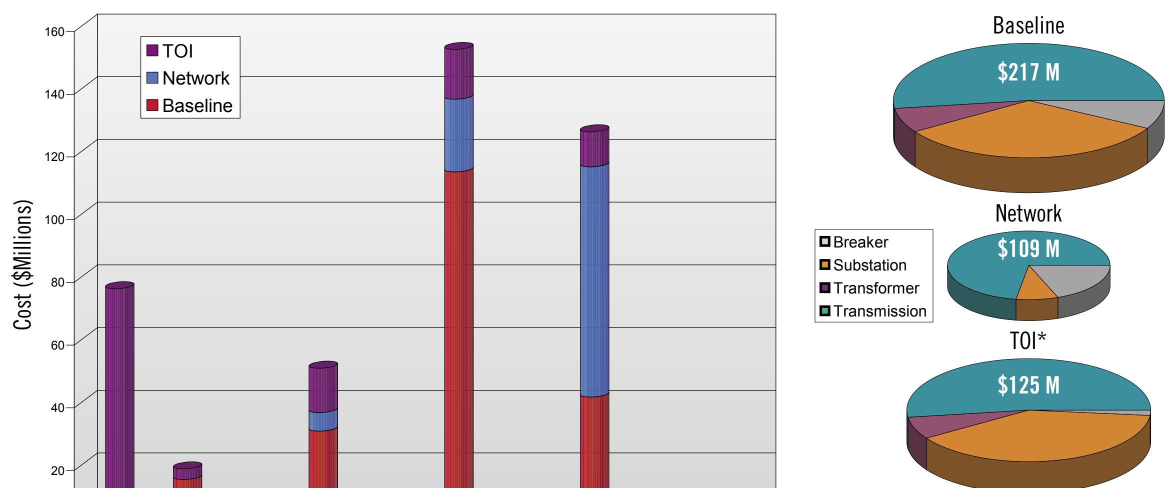
Serving approximately 51 million people, PJM encompasses major U.S. load centers from Illinois's western border to the Atlantic coast including the metropolitan areas in and around Baltimore, Chicago, Columbus, Dayton, Newark and northern New Jersey, Norfolk, Philadelphia, Pittsburgh, Richmond and Washington D.C. Collaborating with more than 390 members, PJM dispatches more than 164,000 megawatts of generation capacity over 56,000 miles of transmission lines – a system that serves nearly 20 percent of the U.S. economy. PJM's footprint includes many key transmission arteries of the U.S. Eastern Interconnection, as **Map 4.0.1-1** shows. PJM's unique interstate geography and electrical topography provide its members access not only to PJM's regional power markets but to those of adjoining systems west, northeast and south of PJM's borders as well.

To date, more than $1.8 billion of transmission expansions have been planned so as to meet the challenges of many system drivers: load growth, generation and merchant transmission interconnection requests, congestion, generator deactivations and operational performance. **Figure 4.0.1-1** contains a summary of the cost of In-Service System Reinforcements by State.

Since the inception of PJM's open, non-discriminatory planning process in 1997, more than 154,000 MW of new generation requests have been included in PJM's interconnection queues. To date, the system enhancements planned by PJM have accommodated more than 16,000 MW of new generation, representing over 130 projects. These generation additions enhance system reliability, supply adequacy and competitive markets for PJM's market participants and the customers they serve.

Importantly, the generation additions represent various fuel types, including natural gas, wind and coal. **Figure 4.0.1-2** contains a summary of In-Service Projects by State.

Figure 4.0.1-1: Cost of In-Service System Reinforcements by States



Note: This summary includes baseline, network and known Transmission Owner Identified upgrades

* Total known to date

Map 4.0.1-1: PJM Backbone Transmission System

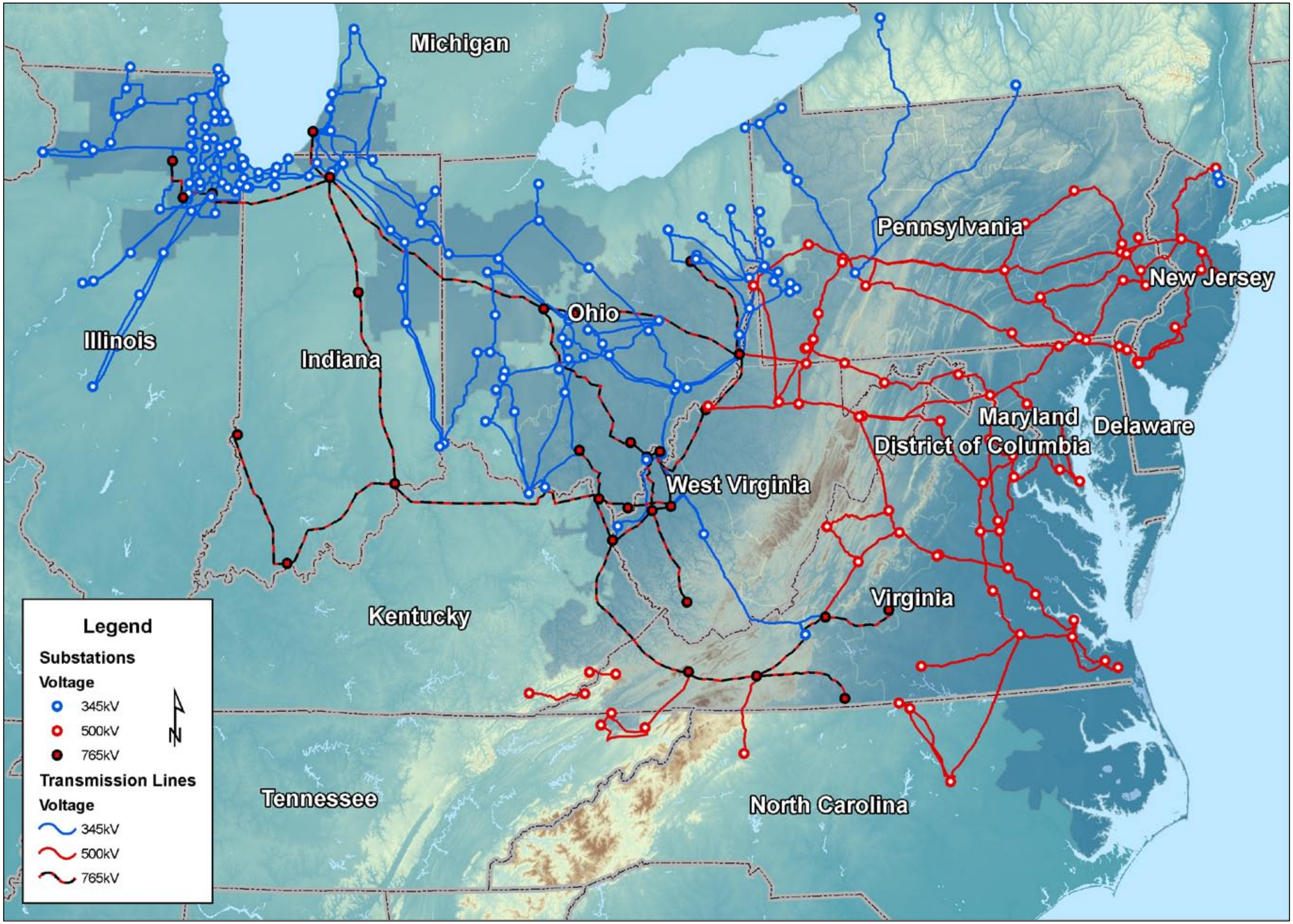
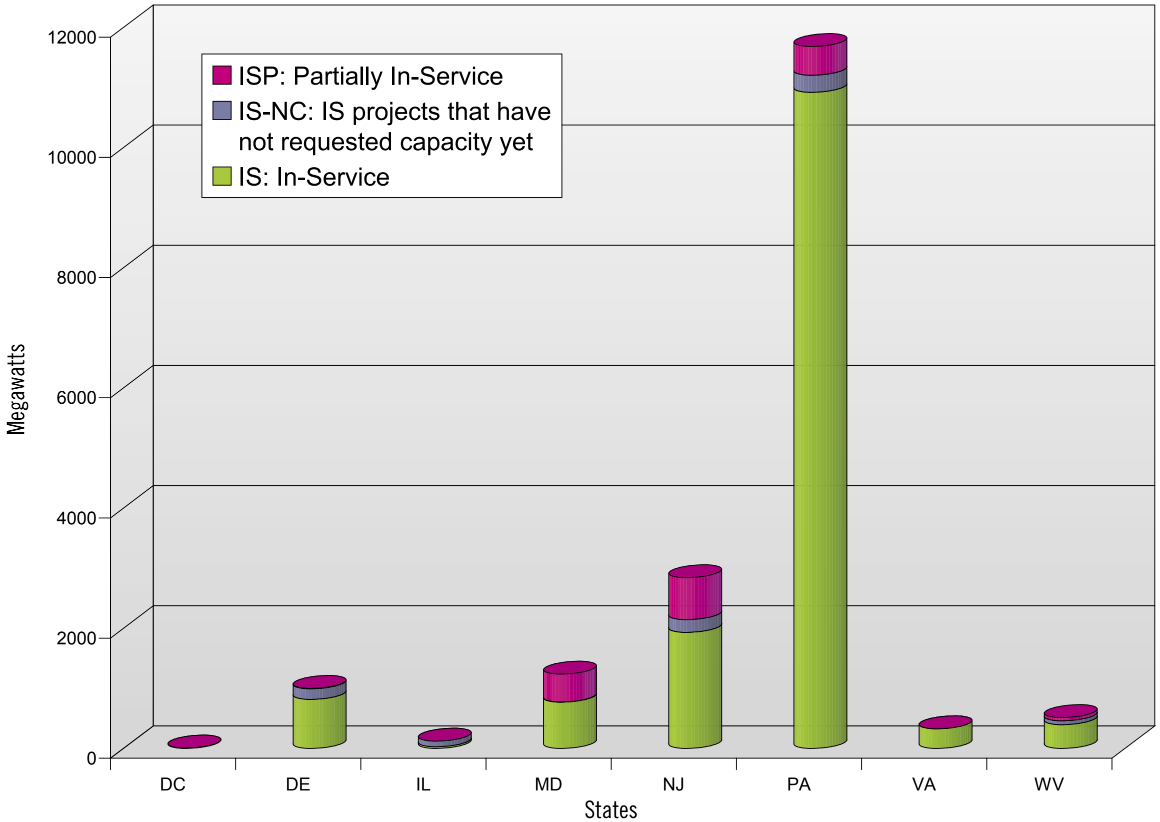


Figure 4.0.1-2: In-Service Generating Resource Projects by State



NOTE

The 2005 PJM Load Forecast Report was issued on February 11, 2005, prior to Dominion's integration into PJM. Thus, the actual and forecast load values shown above do not include the load served by Dominion in the PJM Southern Region. The actual PJM 2005 summer peak load with Dominion included was about 135,000 MW and occurred on July 26, 2005. Full PJM load forecasts for the entire PJM footprint that includes Dominion will be provided with future updates to this report.

PLANNING TRENDS

RTEP recommendations for 2010 are presently being finalized and are expected to be completed in the first quarter of 2006.

4.0.2 – Load Growth

The forecasted 2005 summer peak load served in the PJM footprint (excluding the Dominion service area) was approximately 115,200 MW and is forecasted to grow at an annual rate of 1.7 percent over the future 10-year period, reaching approximately 136,500 MW by the summer of 2015.

TO Zone	2005 Summer Peak MW	Forecast 2015 Peak MW
PJM	115,166	136,549
TOTAL	115,166	136,549

The forecasted 2004/05 winter peak load served in the PJM footprint (excluding the Dominion service area) was approximately 95,700 MW and is forecasted to grow at an annual rate of 1.5 percent over the future 10-year period, reaching approximately 111,100 MW by the winter of 2014/15.

TO Zone	2004/05 Winter Peak MW	Forecast 2014/15 Peak MW
PJM	96,679	111,091
TOTAL	96,679	111,091

The existing PJM transmission system is currently planned to be reinforced to meet expected 2009 peak load conditions as more fully discussed in Section 2 of this report. Beyond 2009, additional transmission system expansion will be needed to meet expected peak load supply requirements. The peak load data presented is from the 2005 PJM Load Forecast Report of February 11, 2005.

4.0.3 – New Generator Interconnection Requests

PJM has received interconnection requests for numerous new generation facilities proposed for installation throughout PJM since 1999.

Status	# of Projects	MW
In-Service	137	16,562
Under Construction	20	3,565
Active (Under Study)	163	24,989
Withdrawn	324	114,121

4.0.4 – Jurisdictional RTEP Summaries

The individual RTEP overviews that follow are arranged in the following sequence. Each section summarizes key RTEP aspects for that particular state jurisdiction.

Section 4.1: Delaware and the Delmarva Peninsula
Section 4.2: Northern Illinois
Section 4.3: Northeastern Indiana
Section 4.4: Eastern Kentucky
Section 4.5; Maryland and the District of Columbia
Section 4.6: Southwestern Michigan
Section 4.7: New Jersey
Section 4.8: Northeastern North Carolina
Section 4.9: Ohio
Section 4.10: Pennsylvania
Section 4.11: Northeastern Tennessee
Section 4.12: Virginia
Section 4.13: West Virginia

Section 4.1: Delaware / Delmarva Peninsula RTEP Overview

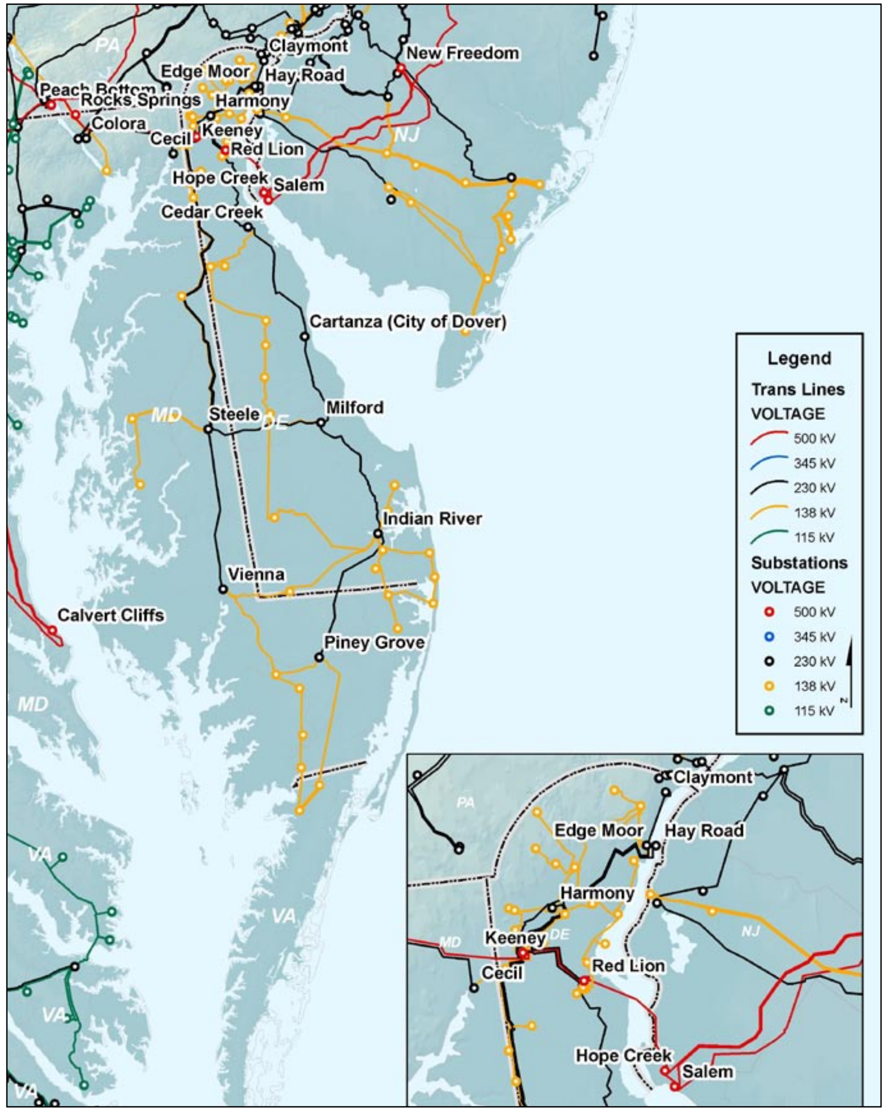
4.1.1 – Load and Generation

PJM's RTEP addresses the Delmarva Peninsula's transmission needs in order to ensure that each Load Serving Entity (LSE) has the ability to serve load reliably and to participate in PJM's interstate regional wholesale markets for energy and ancillary services. Although Delmarva Power & Light is the largest LSE on the Peninsula, other LSEs include Old Dominion Electric Cooperative, the Easton Maryland Utilities Commission, and Occidental Power Services, Inc.

The Delmarva Peninsula yielded a unique set of reliability and congestion system circumstances between 1998 and 2004. **Section 3.4** earlier in this report discussed the collaborative efforts since 1998 among PJM, Peninsula LSEs, Delmarva Power (TO) and regulators. These efforts have been characterized by a dovetailed evolution of transmission need and PJM planning protocol culminating in a more robust set of transmission upgrades and a more robust RTEP Process.

In addition to the RTEP specifics provided in **Section 3.4**, PJM offers some additional information, here, on load growth and generator interconnection activity.

Map 4.1.1-1: PJM's Delaware / Delmarva Service Area



PJM operates the electric transmission system of the Delmarva Power & Light Company as shown in **Map 4.1.1-1**.

Load Growth

The forecasted 2005 summer peak load served on the Peninsula was 4,028 MW and has been forecasted to grow at an annual rate of 2.5 % over the subsequent 10 year period, reaching 5,177 MW by the summer of 2015. The forecasted 2004/05 winter peak load was 3,344 MW and is forecasted to grow at an annual rate of 2.9 percent over the next 10 year period, reaching 4,432 MW by the winter of 2014-15.

The forecasted loads cited above were modeled in the power flow studies used to develop PJM's RTEP through December 2005.

PJM's RTEP currently includes transmission reinforcements to the existing Peninsula transmission system to meet expected 2009 peak load conditions. Beyond 2009, additional transmission system expansion will be needed to meet expected peak load supply requirements.

Existing Generating Capability

Figure 4.1.1-1 provides a snapshot of the existing installed capacity by fuel type for generation on the Peninsula.

Figure 4.1.1-1: Existing Installed Generating Capacity by Fuel Type on the Delmarva Peninsula

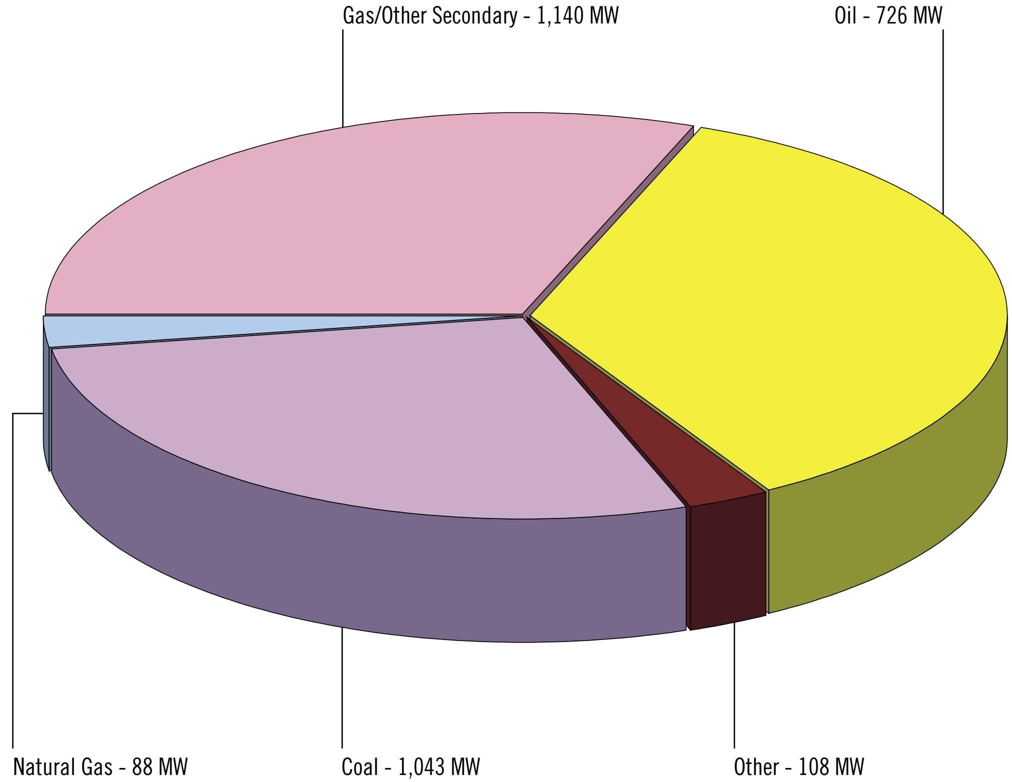
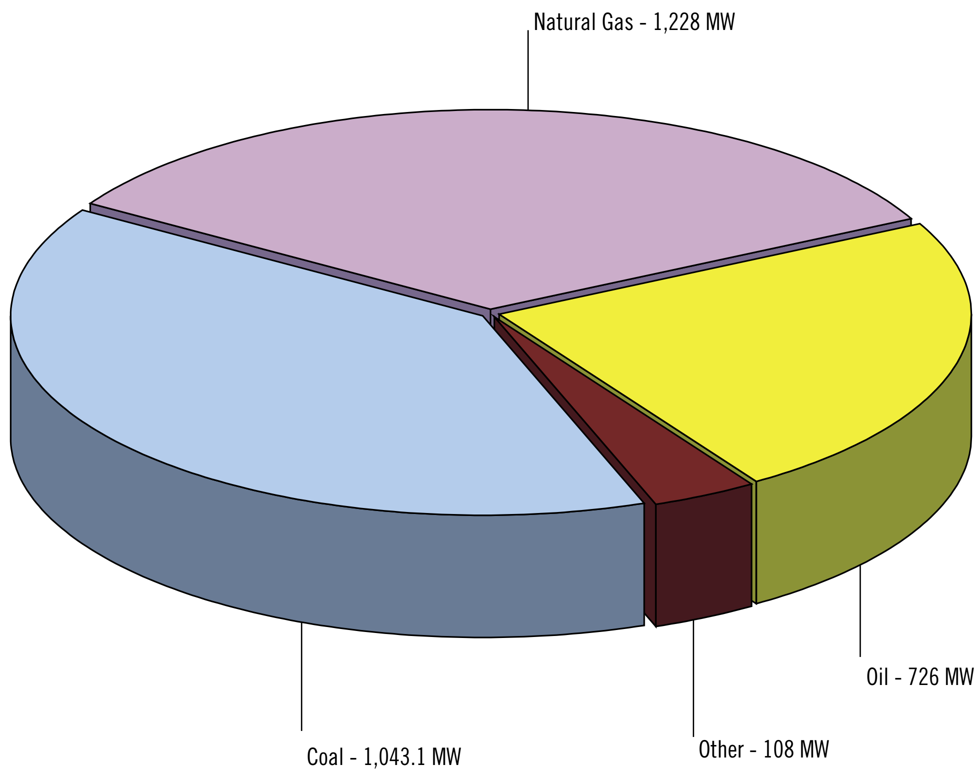


Figure 4.1.2-1: Capacity Rights by Fuel Type for Queued Generation Interconnection Requests on the Delmarva Peninsula



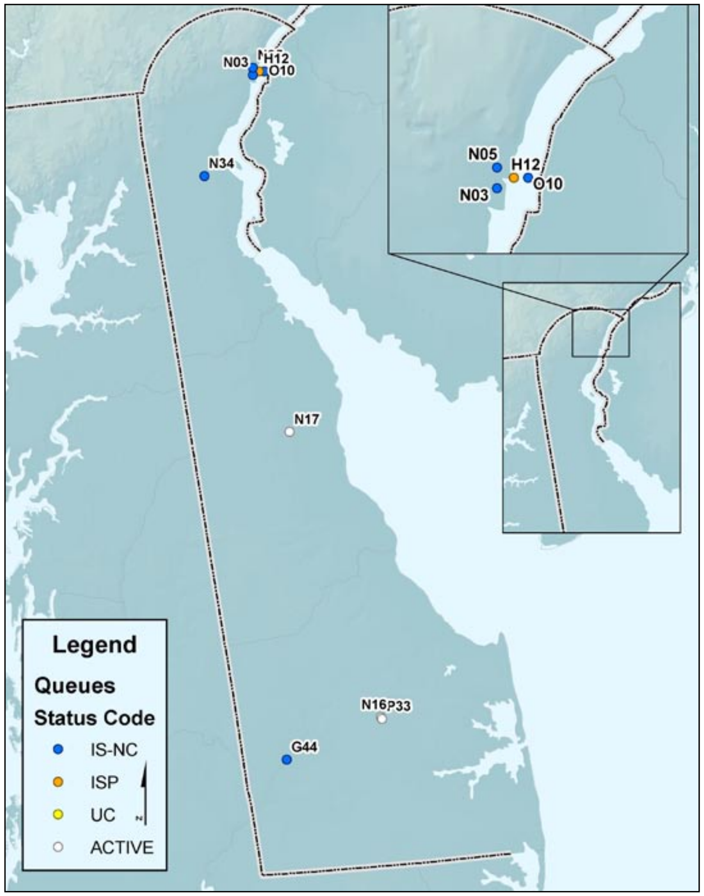
4.1.2 – Generator Interconnection Requests

Queue Status	# of Projects	MW
In-Service	15	2116
Under Construction	0	0
Active (Under Study)	4	14
Withdrawn	13	3342
TOTAL	32	5472

Figure 4.1.2-1 shows the capacity rights requested, by fuel type, for those interconnection requests in Queue A through Queue P that are in-service, under construction or active in PJM's interconnection process, as summarized in the table above.

However, only the transmission enhancements associated with generator interconnection requests in Queue A through Queue N are included in the current RTEP. Interconnection requests in Queue O and Queue P are presently in the Feasibility Study or System Import Study phase of interconnection analysis.

Map 4.1.2-1: Location of Queued Generator Interconnection Requests



IS-NC	In Service, No Capacity Requested
ISP	Partially In Service
UC	Under Construction
Active	In PJM Process

Table 4.1.2-1: Generator Interconnection Requests on the Delmarva Peninsula

Queue	Project Name	MW	MWC	Status	Schedule	TO	Fuel Type
A30	Colora Tap	465	465	ISP	12/1/05	Delmarva	Natural Gas
G44	Dupont Seaford 69 kV	10	10	IS-NC	6/1/02	Delmarva	Natural Gas
H12	Edgemoor 230 kV	10	10	ISP	12/1/05	Delmarva	Natural Gas
N03	Edgemoor 69 kV	7	7	IS-NC	8/9/04	Delmarva	Natural Gas
N05	Edgemoor 138 kV	9	9	IS-NC	8/9/04	Delmarva	Natural Gas
N16	Kent-Harrington 69 kV	4		ACTIVE	12/31/07	Delmarva	Methane
N17	Laurel-Sussex 69 kV	3		ACTIVE	12/31/07	Delmarva	Methane
O10	Edgemoor 138 kV	5	5	IS-NC	6/1/05	Delmarva	Natural Gas
O25	N. Salisbury 25 kV	6	6	ACTIVE	3/6/06	Delmarva	Methane
P33	Laurel - Sussex 69 kV	1		ACTIVE	6/30/06	Delmarva	Methane

Table 4.1.2-1 includes queued generation interconnection requests in Queue A through Queue P that are under construction or active in PJM's RTEP Interconnection Process. **Map 4.1.2-1** shows the location of each queued request in **Table 4.1.2-1**. A status code of "IS-NC" or "ISP" denotes a generating resource that is in-service but has not achieved full capacity status. Resources fully in-service (designated "IS") are not separately enumerated in **Table 4.1.2-1**.

4.1.3 – Transmission Expansion Plans

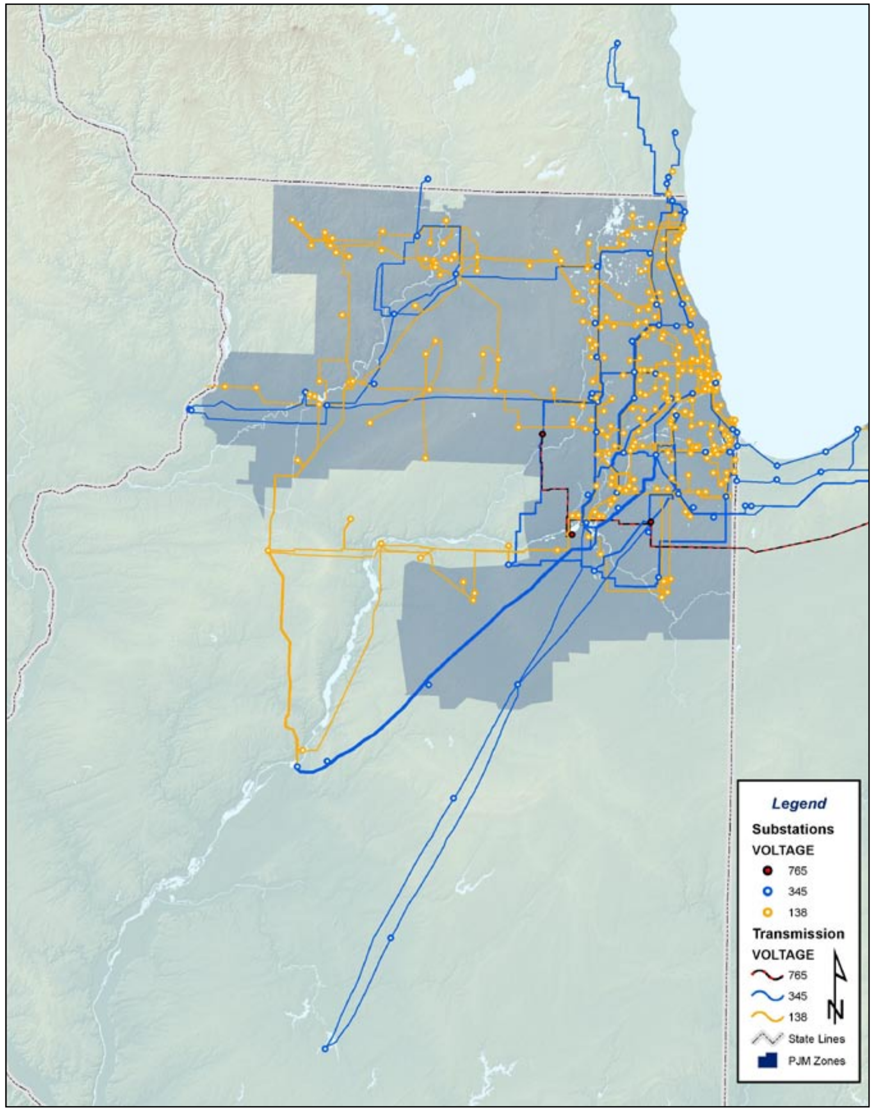
Delmarva Peninsula transmission expansion plans are described in detail in Section 3.4, earlier in this report.

Section 4.2: Northern Illinois RTEP Overview

4.2.1 – Load and Generation

PJM operates the transmission system of Commonwealth Edison Company (ComEd) in northern Illinois. The ComEd transmission service zone provides electric delivery service to the Chicago metropolitan area with an estimated population of 8 million. **Map 4.2.1-1** shows this area of northern Illinois.

Map 4.2.1-1: PJM's Northern Illinois Service Area - Commonwealth Edison



Load Growth

The forecasted 2005 summer peak load served by ComEd in northern Illinois was 22,700 MW and is forecasted to grow at an annual rate of 1.7 % over the future 10 year period, reaching 26,875 MW by the summer of 2015. The forecasted 2004/05 winter peak load was 15,300 MW and is forecasted to grow at an annual rate of 1.5 percent over the next 10 year period, reaching 17,800 MW by the winter of 2014-15.

The forecasted loads cited above were modeled in the power flow studies used to develop PJM's RTEP through December 2005.

Existing Generating Capacity

Figure 4.2.1-1 provides a snapshot of the existing installed capacity by fuel type in northern Illinois.

Figure 4.2.1-1: Existing Generating Capacity the PJM's Northern Illinois Service Area - Commonwealth Edison

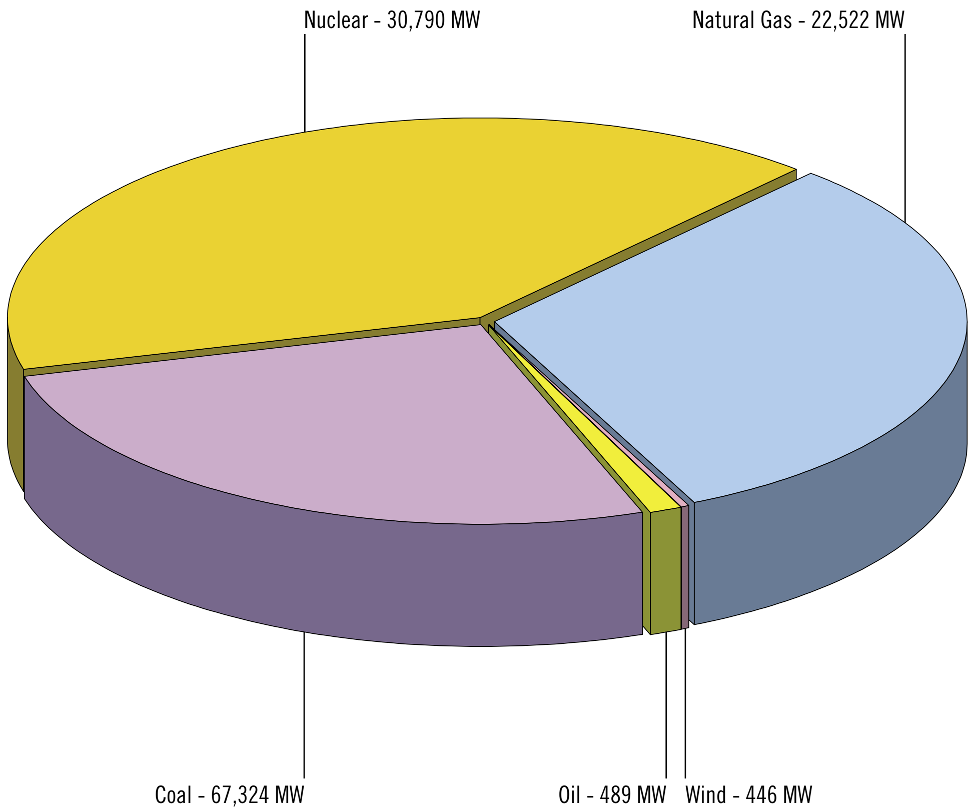
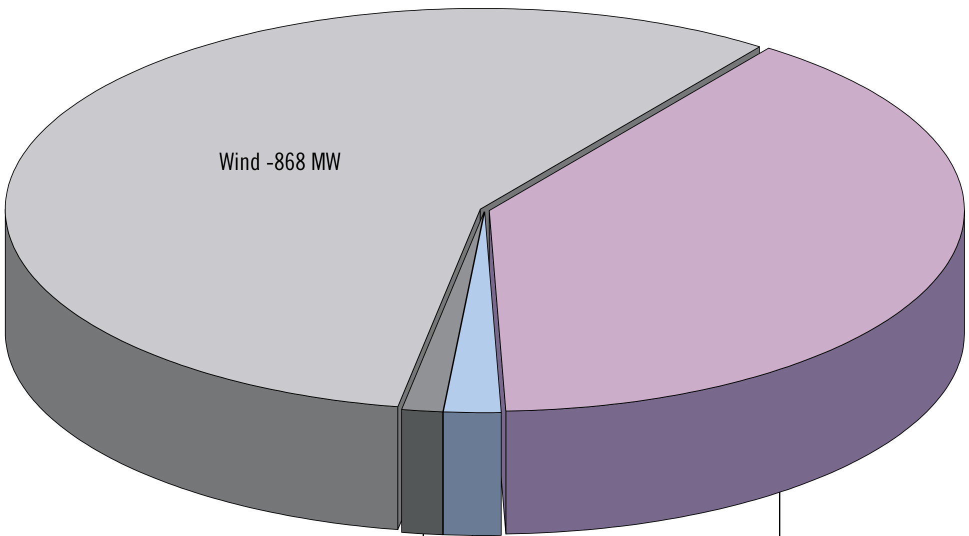


Figure 4.2.2-1: Capacity Rights by Fuel Type for Queued Generator Interconnection Requests



4.2.2 – Generator Interconnection Requests

PJM has received over 50 interconnection requests for new generation resources proposed for installation in northern Illinois since 2004.

Queue Status	# of Projects	MW
In-Service	5	125
Under Construction	3	318
Active (Under Study)	39	5769
Withdrawn	16	814
TOTAL	63	7026

Figure 4.2.2-1 shows the capacity rights requested by fuel type for those generator interconnection requests that are in-service, under construction or active in PJM's interconnection process.

Table 4.2.2-1 includes the queued generation interconnection requests in Queue A through Queue P that are under construction or active in PJM's RTEP interconnection process. **Map 4.2.2-1** shows the location of each queued request in **Table 4.2.2-1**. A status code of "IS-NC" or "ISP" denotes a generating resource that is in-service but has not achieved full capacity status. Resources fully in-service (designated "IS") are included in the earlier summary tabulation, but are not separately enumerated in the expanded **Table 4.2.2-1** that follows. Only transmission enhancements associated with generator interconnection requests in Queue A through Queue N are included in the current RTEP. Interconnection requests in Queue O and Queue P are presently in the Feasibility Study or System Impact Study phase of interconnection analysis.

Table 4.2.2-1: Queued Generation Interconnection Requests in the PJM Northern Illinois Service Area

Queue	Project Name	MW	MWC	Status	Schedule	TO	Fuel Type
K02_CE18	Baileyville Wind Farm	80	16	UC	12/31/06	ComEd	Wind
K04_CE19	Freeport Wind Farm	80	16	UC	12/31/07	ComEd	Wind
K07_CE20	Benson Wind Farm	158	31.6	UC	12/31/07	ComEd	Wind
L05_CE22	Camp Grove	150	30	ACTIVE	9/1/06	ComEd	Wind
L12_CE23	West Brooklyn II	20	4	ACTIVE	12/31/06	ComEd	Wind
L13_CE26	Heartland Grand Ridge	175	35	ACTIVE	10/30/06	ComEd	Wind
M21	Rochelle	20	20	IS-NC	6/1/04	ComEd	Diesel
M28	Elwood-Dresden 345 kV	600	600	ACTIVE	1/1/08	ComEd	Coal
N15	LaSalle 138 kV	150	30	ACTIVE	5/1/06	ComEd	Wind
N21	Sublette Wind II	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N22	Sublette Wind 3	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N23	West Brooklyn Wind 3	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N24	West Brooklyn 4	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N25	West Brooklyn 5	11	2.2	ACTIVE	12/1/06	ComEd	Wind
O05	Rochelle	2	2	IS-NC	6/30/05	ComEd	Diesel
O07	Poplar Grove 34.5 kV	25	5	ACTIVE	9/1/06	ComEd	Wind
O09	Normandy	212	42.4	ACTIVE	12/1/06	ComEd	Wind
O12	Chicago Heights 138 kV	20	20	IS-NC	12/1/05	ComEd	Waste
O22	Powerton-Goodings Grove 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O23	Powerton-Dresden 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O24	Pontiac Midpoint-Dresden 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O27	Powerton-Goodings Grove 345 kV	500	100	ACTIVE	12/1/07	ComEd	Wind
O29	Normandy 138 kV	225	45	ACTIVE	12/1/06	ComEd	Wind
O33	West Brooklyn 6	20	4	ACTIVE	12/1/06	ComEd	Wind
O35	Crescent Ridge	75	15	ACTIVE	12/31/06	ComEd	Wind
O43	University Park	54	54	IS-NC	12/1/05	ComEd	Natural Gas
O47	Nora	10		ACTIVE	9/1/06	ComEd	Wind
O49	Wempletown-Byron 345 kV	200	40	ACTIVE	12/1/07	ComEd	Wind
O50	Powerton-Dresden 345 kV	200	40	ACTIVE	12/1/08	ComEd	Wind
O51	Pontiac Midpoint-Wilton Center 345 kV	500	100	ACTIVE	12/31/07	ComEd	Wind
O68	Dixon-Cherry Valley 138 kV	100	20	ACTIVE	12/1/07	ComEd	Wind
O73	Benson 345 kV	100	20	ACTIVE	12/31/07	ComEd	Wind
P10	LaSalle 138 kV	200	40	ACTIVE	12/31/06	ComEd	Wind
P11	Kewanee 138 kV	200	40	ACTIVE	12/31/06	ComEd	Wind
P14	McGirr - Mendota 138 kV	80	16	ACTIVE	12/1/06	ComEd	Wind
P18	Dixon-Mendota 34 kV	20	4	ACTIVE	9/30/06	ComEd	Wind
P20	Nelson-Electric Junction 345 kV	210	42	ACTIVE	9/15/07	ComEd	Wind
P21	McGirr Road - Dixon 138 kV	150	30	ACTIVE	9/15/07	ComEd	Wind
P24	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P25	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P26	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P36	Nelson-Lee Co. EC 345 kV	240	48	ACTIVE	9/15/07	ComEd	Wind
P37	Normandy 138 kV	212	42.4	ACTIVE	9/15/07	ComEd	Wind
P39	Kewanee-Powerton 138 kV	60	12	ACTIVE	11/1/07	ComEd	Wind
P40	Crescent Ridge 138 kV	20	4	ACTIVE	6/30/06	ComEd	Wind
P46	Lena 138 kV	100	20	ACTIVE	10/1/07	ComEd	Wind

Map 4.2.2-1: Queued Generation Interconnection Requests in the PJM Northern Illinois Area

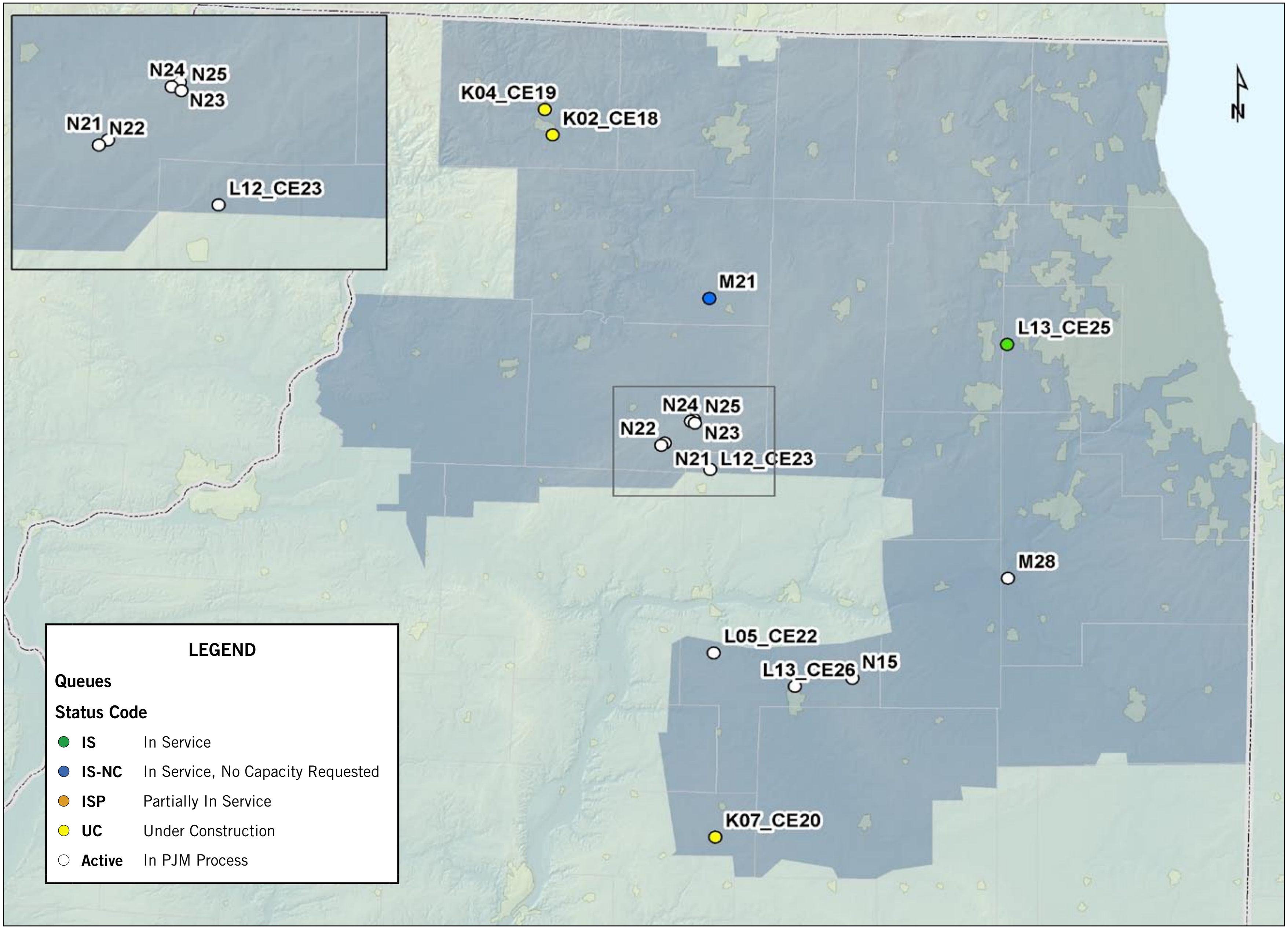


Table 4.2.3-1: Major Transmission System Upgrades in PJM Northern Illinois Service Area

		System Upgrade Drivers											
		Baseline Upgrades				Network Upgrades		TOI Upgrade	Transmission Service				
Map Ref.	**Limiting Facility** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
1	**Joliet - Hillcrest 138 kV Circuit**											ComEd	IL
	Re-conductor Joliet - Hillcrest 138 kV	X								June 2007	$ 2 M	ComEd	IL
2	**Nelson 345/138 kV Transformer**											ComEd	IL
	Install third Nelson 345/138 kV	X								June 2008	$ 5 M	ComEd	IL
3	**East Frankfort - Goodings Grove 345/138 kV Circuit and East Frankfort - Mokena Tap 138 kV Circuit**											ComEd	IL
	Install 345/138 kV transformers at East Frankfort and Goodings Grove and Reconductor East Frankfort - Mokena Tap 138 kV Line	X								June 2008	$ 15 M	ComEd	IL
4	**Install Silver Lake - Pleasant Valley 345 kV and Pleasant Valley 345/138 kV**											ComEd	IL
	Install Silver Lake - Pleasant Valley 345 kV and Pleasant Valley 345/138 kV	X								May 2005	$ 13.5 M	ComEd	IL
5	**Grand Ridge TSS 999**											ComEd	IL
	Install a new three breaker bus and associated equipment at Grand Ridge TSS 999					X					$ 8.25 M	ComEd	IL
6	**Toulon TSS 81**											ComEd	IL
	Install new Toulon TSS 81 Substation for L05_CE22					X					$ 4.59 M	ComEd	IL
7	**Pontiac TSS 80**											ComEd	IL
	Install a new ring bus terminal and associated equipment on the existing Pontiac TSS 80 Bus					X					$ 4.58 M	ComEd	IL

Table 4.2.3-1: Major Transmission System Upgrades in PJM Northern Illinois Service Area, Continued

		System Upgrade Drivers: Baseline Upgrades				System Upgrade Drivers: Network Upgrades		System Upgrade Drivers: TOI Upgrade	System Upgrade Drivers: Transmission Service				
Map Ref.	**Limiting Facility** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
8	**Northbrook TSS 159 and Northbrook TDC 212**											ComEd	IL
	Upgrade 138 kV lines 159 12/13 between Northbrook TSS 159 and Northbrook TDC 212							X		June 2005	$ 1.99 M	ComEd	IL
9	**TSS 996 Benson 345 kV**											ComEd	IL
	Install new TSS 996 Benson 345 kV 3-CB Ring bus					X					$ 1.7 M	ComEd	IL
10	**Wolfs - Oswego 138 kV Circuit**											ComEd	IL
	Reconductor 14302 Wolfs - Oswego 138 kV with 636 ACSS	X								June 2009	$ 2 M	ComEd	IL
	Reconductor 14304 Wolfs - Oswego 138 kV with 636 ACSS							X		June 2006	$ 2 M	ComEd	IL
11	**West Loop 345 kV and 138 kV Circuits**											ComEd	IL
	Build West Loop 345 kV sub, 138 kV sub, two 345/138 kV transformers, two new 345 kV circuits (one from Taylor and one from Crawford)	X								June 2008	$ 392 M	ComEd	IL
12	**Cherry Valley - Alpine 138 kV Circuit**											ComEd	IL
	Increase capacity of 138 kV line 15623 from Cherry Valley TSS 156 to Alpine TSS 160 tap.							X		June 2006	$ 4.6 M	ComEd	IL
13	**Grenshaw 138 kV Circuit**											ComEd	IL
	Install new 138 kV Grenshaw sub and TSS 197 138 kV ring bus.							X		June 2006	$ 40 M	ComEd	IL
14	**Elmhurst 138 kV Circuit Breakers**											ComEd	IL
	Install a 2nd circuit breaker in series with 138 kV bus-tie circuit breaker 1-2 at TSS 135 Elmhurst.							X		June 2006	$ 1.5 M	ComEd	IL

4.2.3 – Transmission Expansion Plans

Major transmission system expansions are planned for both the Business District of Chicago and the growing suburbs to the west, northwest, and southwest of Chicago, as summarized in **Table 4.2.3-1** and shown in **Map 4.2.3-1**.

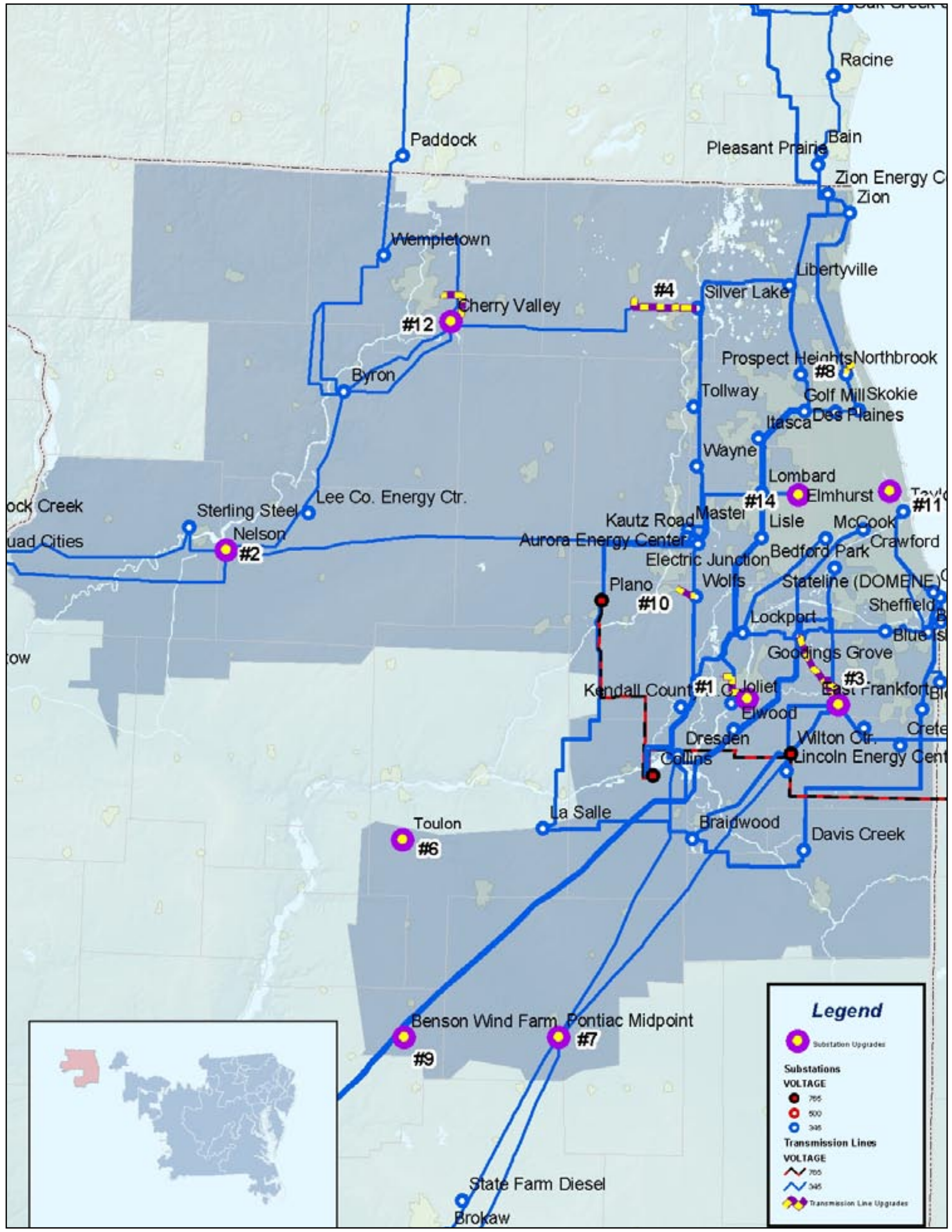
System Expansion Requirements for Load Growth

Business District Chicago - Four specific projects have been identified to increase supply capability and maintain reliability of supply to the Commercial and Financial districts that constitute the Business District area of Chicago. Those projects include:

1. Installation of a second Burnham-Taylor 345 kV Line.
2. Installation of a new Grenshaw 138 kV Substation.
3. Installation of a new West Loop 138 kV Switching Station.
4. Installation of a new West Loop 345-138 kV Substation.

The first project - to install a second Burnham-Taylor 345 kV Line - was completed in the summer of 2004 to maintain adequate supply reliability. Two proposed projects expected to be completed during 2006 include the installation of a new 138 kV Substation at Grenshaw and a West Loop 138 kV Switching Station to increase supply to meet expected load growth and maintain reliability to the 138 kV delivery system in the north end of the Chicago Business District. The fourth project is to install a new West Loop 345-138 kV Substation in 2008 to increase supply for forecasted load growth.

Map 4.2.3-1: Major Transmission Upgrades in the PJM Northern Illinois Service Area



Suburban Chicago - Transmission System expansion is also required to meet forecasted load growth in the growing suburban area around Chicago. Three specific projects have been identified to increase supply capability and maintain supply reliability to suburban areas, generally west of Chicago. Those projects are:

1. Installation of a new Wolf's Crossing 345-138 kV Substation,
2. Installation of a Silver Lake-Pleasant Valley 345 kV Line and a Pleasant Valley 345-138 kV Substation, and
3. Installation of an additional 345-138 kV transformer at East Frankfort Substation.

The project to install the Wolf's Crossing 345-138 kV Substation was completed in the summer of 2004 to increase supply capability for load growth in the suburban area west of Chicago. The project to install the new Pleasant Valley Substation and supply line was completed in the summer of 2005 to increase supply for load growth and maintain reliability of the 138 kV delivery system in the suburban area northwest of Chicago. The third project is to install a new East Frankfort 345-138 kV transformer by the summer of 2006 to provide adequate supply for the growing suburbs southwest of Chicago.

System Expansion Requirements for New Generation and Deactivating Generation

Adequate PJM transmission system capability is required for delivery of energy from the aggregate of capacity resources to the aggregate of PJM load. Thus, adequate transmission system capability must be provided to accommodate both the interconnection of new generation resources and the planned removal of any existing generation resources.

Generator Deactivations and Retirements

The generation fleet in northern Illinois is comprised mainly of two major fuel types: nuclear and coal-fired. The existing coal-fired generation was mostly installed in the 1950s and 1960s. Potential environmental regulations and uncertainty may impact the economic viability of some plants. Other plants, originally oil-fired and later converted to gas-fired operation have become uneconomical to run. One such plant, Collins with 5-550 MW units, has been retired.

By contrast, some deactivated generating resources are returning to service, partially off-setting those that are retiring. Will Count Station has returned a once-mothballed unit to operation as a result of system economics favoring to its return to operation. The transmission system must be studied and reinforced as necessary to maintain adequate transmission capability in light of such changes in unit status.

Even with known generation retirements, sufficient generating capability exists in northern Illinois to reliably supply existing load requirements with some excess available for export. The integration of northern Illinois into the PJM market in the spring of 2004 and the further integration of the AEP transmission system into PJM in October 2004 provided northern Illinois generation with transmission access to the PJM markets east of Illinois and to the Wisconsin energy markets to the north.

4.2.4 – Other Related RTEP Initiatives

Wind-powered Generation

Approximately 30 wind generation projects proposed for installation in northern Illinois are currently in the PJM queue for interconnections to the transmission system. The wind generator interconnection requests range in size from less than 10 MW to greater than 200 MW per site. In northern Illinois, PJM is currently tracking the development of 5,169 MW of active wind generation development projects with 318 MW under construction. More discussion about wind-powered generating facilities can be found in **Section 3.6**. They are primarily located in three distinct areas of Illinois, as shown in **Map 4.2.4-1** and summarized in **Table 4.2.4-1**.

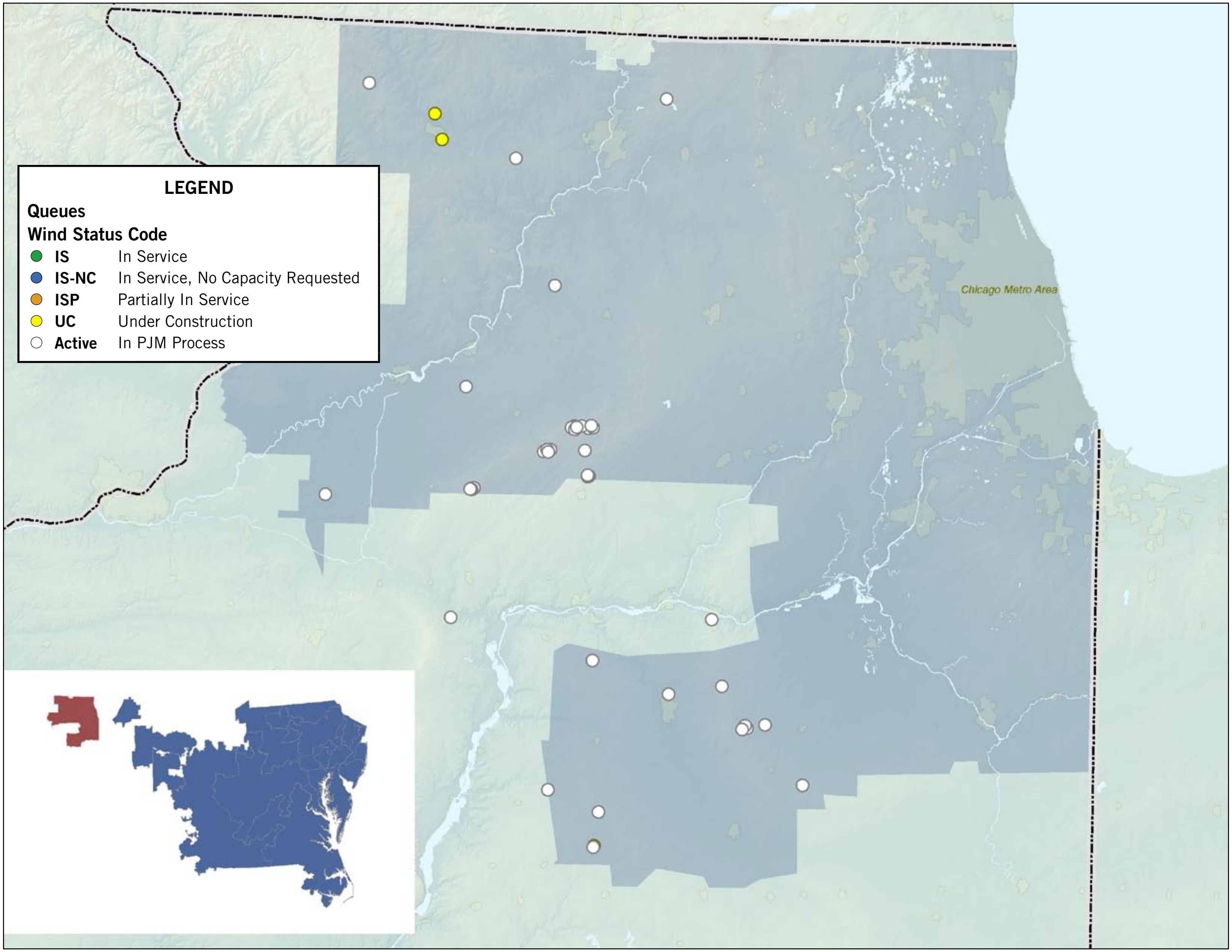
1. The extreme northwestern corner of the Illinois.
2. The western portion of the Illinois.
3. The central part of Illinois (SW of Chicago).

These areas are favorable to wind project development and have often yielded interconnection requests to the transmission system at the same electrical locations. Those locations are generally in rural areas with low population density where load density is low and the availability of existing transmission line capability suitable for large amounts of generation interconnection is presently limited. Some projects, should they go forward, may require significant transmission system expansion to be accommodated in these areas.

Table 4.2.4-1: Queued Wind Generation Projects in the PJM Northern Illinois Service Area

Queue	Project Name	MW	MWC	Status	Schedule	TO	Fuel Type
K02_CE18	Baileyville Wind Farm	80	16	UC	12/31/06	ComEd	Wind
K04_CE19	Freeport Wind Farm	80	16	UC	12/31/07	ComEd	Wind
K07_CE20	Benson Wind Farm	158	31.6	UC	12/31/07	ComEd	Wind
L05_CE22	Camp Grove	150	30	ACTIVE	9/1/06	ComEd	Wind
L12_CE23	West Brooklyn II	20	4	ACTIVE	12/31/06	ComEd	Wind
L13_CE26	Heartland Grand Ridge	175	35	ACTIVE	10/30/06	ComEd	Wind
N15	LaSalle 138 kV	150	30	ACTIVE	5/1/06	ComEd	Wind
N21	Sublette Wind II	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N22	Sublette Wind 3	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N23	West Brooklyn Wind 3	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N24	West Brooklyn 4	11	2.2	ACTIVE	12/1/06	ComEd	Wind
N25	West Brooklyn 5	11	2.2	ACTIVE	12/1/06	ComEd	Wind
O07	Poplar Grove 34.5 kV	25	5	ACTIVE	9/1/06	ComEd	Wind
O09	Normandy	212	42.4	ACTIVE	12/1/06	ComEd	Wind
O22	Powerton-Goodings Grove 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O23	Powerton-Dresden 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O24	Pontiac Midpoint-Dresden 345 kV	300	60	ACTIVE	12/1/08	ComEd	Wind
O27	Powerton-Goodings Grove 345 kV	500	100	ACTIVE	12/1/07	ComEd	Wind
O29	Normandy 138 kV	225	45	ACTIVE	12/1/06	ComEd	Wind
O33	West Brooklyn 6	20	4	ACTIVE	12/1/06	ComEd	Wind
O35	Crescent Ridge	75	15	ACTIVE	12/31/06	ComEd	Wind
O47	Nora	10		ACTIVE	9/1/06	ComEd	Wind
O49	Wempletown-Byron 345 kV	200	40	ACTIVE	12/1/07	ComEd	Wind
O50	Powerton-Dresden 345 kV	200	40	ACTIVE	12/1/08	ComEd	Wind
O51	Pontiac Midpoint-Wilton Center 345 kV	500	100	ACTIVE	12/31/07	ComEd	Wind
O68	Dixon-Cherry Valley 138 kV	100	20	ACTIVE	12/1/07	ComEd	Wind
O73	Benson 345 kV	100	20	ACTIVE	12/31/07	ComEd	Wind
P10	LaSalle 138 kV	200	40	ACTIVE	12/31/06	ComEd	Wind
P11	Kewanee 138 kV	200	40	ACTIVE	12/31/06	ComEd	Wind
P14	McGirr - Mendota 138 kV	80	16	ACTIVE	12/1/06	ComEd	Wind
P18	Dixon-Mendota 34 kV	20	4	ACTIVE	9/30/06	ComEd	Wind
P20	Nelson-Electric Junction 345 kV	210	42	ACTIVE	9/15/07	ComEd	Wind
P21	McGirr Road - Dixon 138 kV	150	30	ACTIVE	9/15/07	ComEd	Wind
P24	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P25	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P26	Mendota 34.5 kV	20	4	ACTIVE	12/1/07	ComEd	Wind
P36	Nelson-Lee Co. EC 345 kV	240	48	ACTIVE	9/15/07	ComEd	Wind
P37	Normandy 138 kV	212	42.4	ACTIVE	9/15/07	ComEd	Wind
P39	Kewanee-Powerton 138 kV	60	12	ACTIVE	11/1/07	ComEd	Wind
P40	Crescent Ridge 138 kV	20	4	ACTIVE	6/30/06	ComEd	Wind
P46	Lena 138 kV	100	20	ACTIVE	10/1/07	ComEd	Wind

Map 4.2.4-1: Wind Generation Projects in the Northern Illinois PJM Area



Section 4.3: Northeastern Indiana RTEP Overview

4.3.1 – Load and Generation

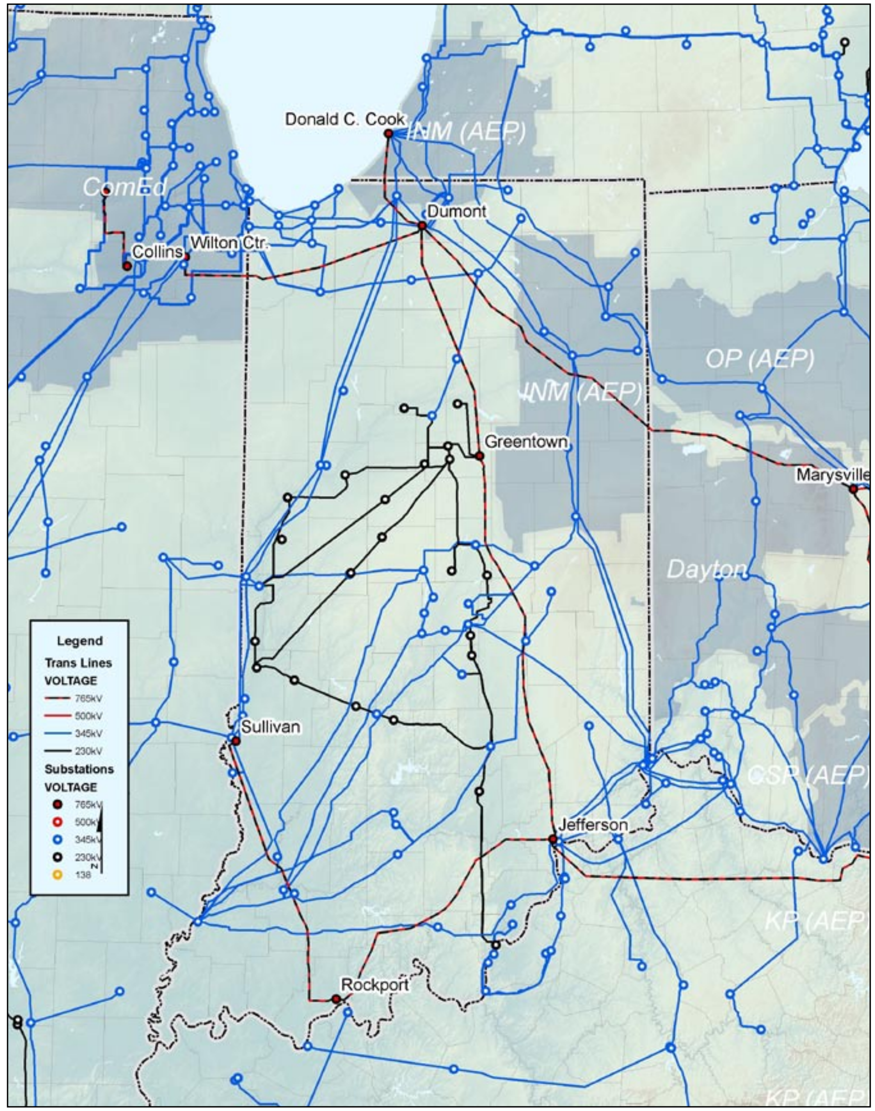
PJM operates the electric transmission system of the American Electric Power Company (AEP) in its Indiana Michigan Power (INM) sub-zone in northeastern Indiana and southwestern Michigan, as shown in **Map 4.3.1-1**. This AEP transmission service zone provides service to INM load customers and transmits energy to the areas east and south of INM.

Load Growth

Customer load in northeastern Indiana and southwestern Michigan peaks during the summer. The forecasted 2005 summer peak load for the AEP INM sub-zone was 4,827 MW and has been forecasted to grow at an annual rate of 2.0 percent over the next 10 year period and is forecasted to reach 5,913 MW by the summer of 2015. The forecasted 2004/05 winter peak load served by AEP INM sub-zone was 4,139 MW and has been forecasted to grow at an annual rate of 1.6 percent over the next 10 year period, reaching 4,828 MW by the winter of 2014/15.

The forecasted loads cited above were modeled in the power flow studies used to develop PJM's RTEP through December 2005.

Map 4.3.1-1: PJM Area in Northeastern Indiana Served by AEP's INM Sub-zone



PJM's RTEP currently includes transmission upgrades in AEP's INM sub-zone to serve forecasted peak load through 2015. Beyond 2015, transmission System expansion will likely be needed to meet expected peak load supply requirements.

Existing Generating Capacity

Figure 4.3.1-1 provides a snapshot of the existing installed capacity by fuel type in the AEP INM sub-zone served by PJM

4.3.2 – Generator Interconnection Requests

PJM has received one queued interconnection request for the AEP INM sub-zone: an 84 MW capacity increase at the Cook nuclear generation facility in nearby southwestern Michigan, as summarized in **Table 4.3.2-1** and shown in **Map 4.3.1-1**. From an RTEP development perspective, only the transmission enhancements associated with generator interconnection requests in Queue A through Queue N are included in the current RTEP. This particular interconnection request, Queue position O42, is presently in the early study phases of PJM's RTEP interconnection process. Any required upgrades will appear in an upcoming RTEP.

Figure 4.3.1-1: Existing Installed Capacity by Fuel Type: PJM Area Served by AEP's INM Sub-zone

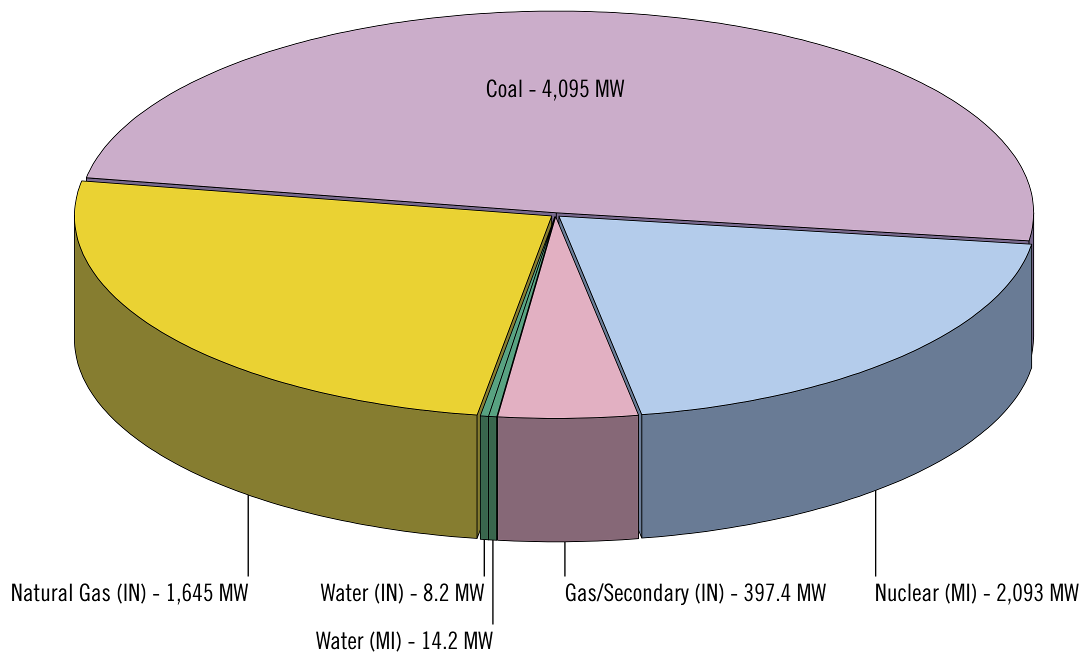


Table 4.3.2-1: Queued Generation Interconnection Requests in the PJM Area of Northern Indiana and Southwestern Michigan

Queue	Project Name	MW	MWC	Status	Schedule	TO	Fuel Type	State
O42	Cook 345 kV	84	84	ACTIVE	10/1/06	AEP	Nuclear	MI

Table 4.3.3-1: Major Transmission System Upgrades in the PJM Area of Northwestern Indiana and Southwestern Michigan

		System Upgrade Drivers											
		Baseline Upgrades				Network Upgrades		TOI Upgrade	Transmission Service				
Map Ref.	**Limiting Facility** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
1	**Cook 345 kV Circuit Breakers**											AEP	MI
	Replace Six breakers at Cook 345 kV Station	X								June 2009	$ 6.2 M	AEP	MI

4.3.3 – Transmission Expansion Plans

Table 4.3.3-1 summarizes the one major transmission upgrade in PJM's RTEP for the AEP INM sub-zone. Slated for 2009, circuit breaker upgrades at the Cook 345 kV substation to mitigate an identified baseline reliability constraint. The Cook substation is located in southwestern Michigan as seen in **Map 4.3.1-1**, earlier in this section

4.3.4 – Other Related RTEP Initiatives

Wind Generation Projects

No wind-powered generating projects have been queued through PJM's interconnection process for development in the AEP INM sub-zone.

Generator Deactivation Requests

PJM has not received any requests for generator deactivations in the AEP INM sub-zone.

PJM DE DC IL IN KY MD MI NJ NC OH PA TN VA WV

Section 4.4: Eastern Kentucky RTEP Overview

4.4.1 – Load and Generation

PJM operates the electric transmission system of the American Electric Power Company (AEP) Kentucky Power sub-zone in eastern Kentucky, as shown in **Map 4.4.1-1**.

Load Growth

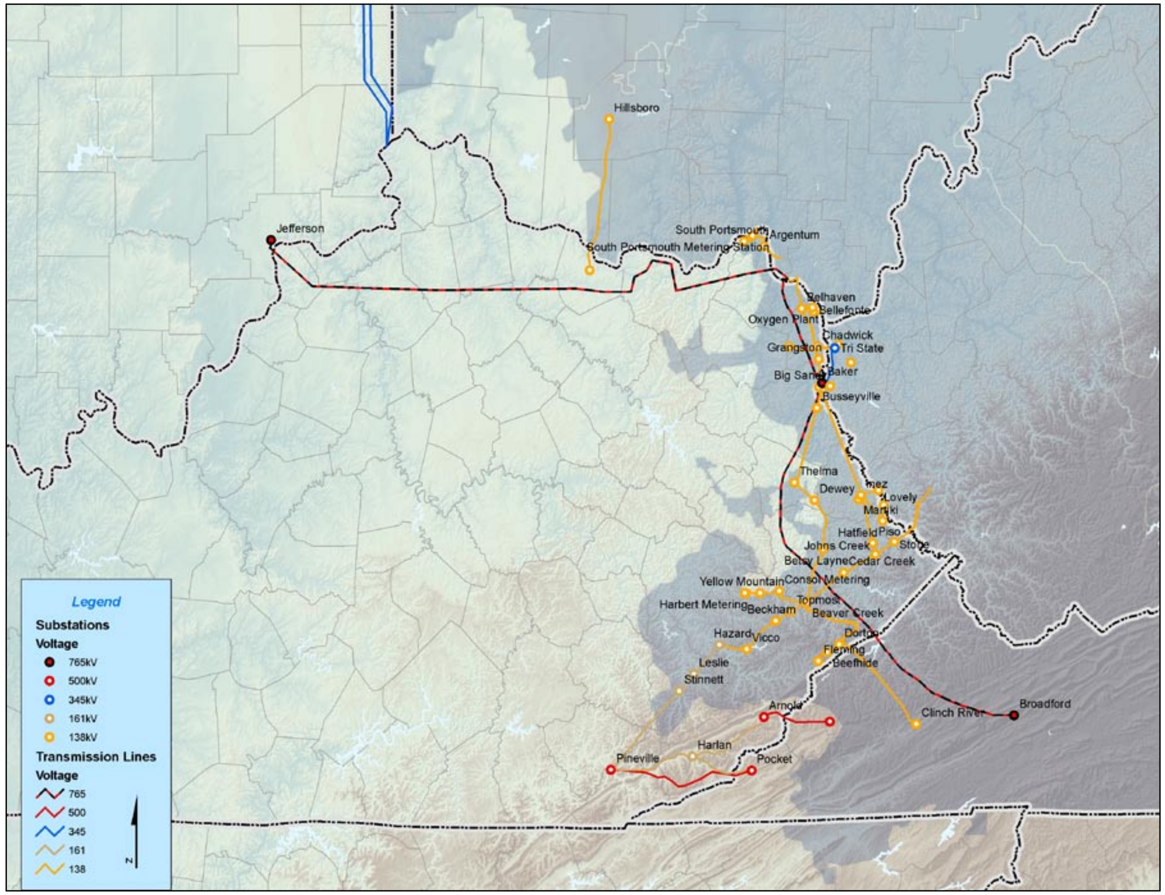
Customer load in eastern Kentucky peaks during the winter rather than during the summer. The forecasted 2004-5 winter peak load was 1,521 MW and is forecasted to grow at an annual rate of 1.4 percent over the next 10-year period, reaching 1,745 MW by the winter of 2014-15.

The forecasted 2005 summer peak load served by AEP in the Kentucky Power sub-zone was 1,271 MW and is forecasted to grow at an annual rate of 1.3 percent over the next 10 year period, reaching 1,451 MW by the summer of 2015.

The forecasted loads cited above were modeled in the power flow studies used to develop PJM's RTEP through December 2005.

The existing transmission system in eastern Kentucky will remain adequate to serve the forecasted peak load through 2015. Beyond 2015, transmission System expansion will be needed to meet expected peak load supply requirements.

Map 4.4.1-1: Eastern Kentucky Area Served by PJM



Existing Generating Capacity

Existing installed capacity in the portion of Eastern Kentucky served by PJM includes 1,060 MW of coal generating facilities and 836 MW of natural gas fired generating facilities.

New Generator Interconnections

Table 4.4.1-1 and **Map 4.4.1-2** summarize the queued generation requests in Queue A through Queue P that presently are in service, under construction or active in PJM's RTEP interconnection process. Only transmission enhancements associated with generator interconnection requests in Queue A through Queue N are included in the current RTEP. Interconnection requests in Queue O and Queue P are presently in the Feasibility Study or System Impact Study phase of interconnection analysis.

4.4.2 – Transmission Expansion Plans

No transmission upgrades are presently planned through PJM's RTEP for the AEP sub-zone in eastern Kentucky.

4.4.3 – Other Related RTEP Initiatives

Wind Generation Projects under development in Eastern Kentucky

No wind-powered generating projects have been proposed for installation in eastern Kentucky.

Generator Deactivation Requests

PJM has not received any requests for generator deactivations in Kentucky.

Map 4.4.1-2: Location of Queued Generation Requests in Eastern Kentucky

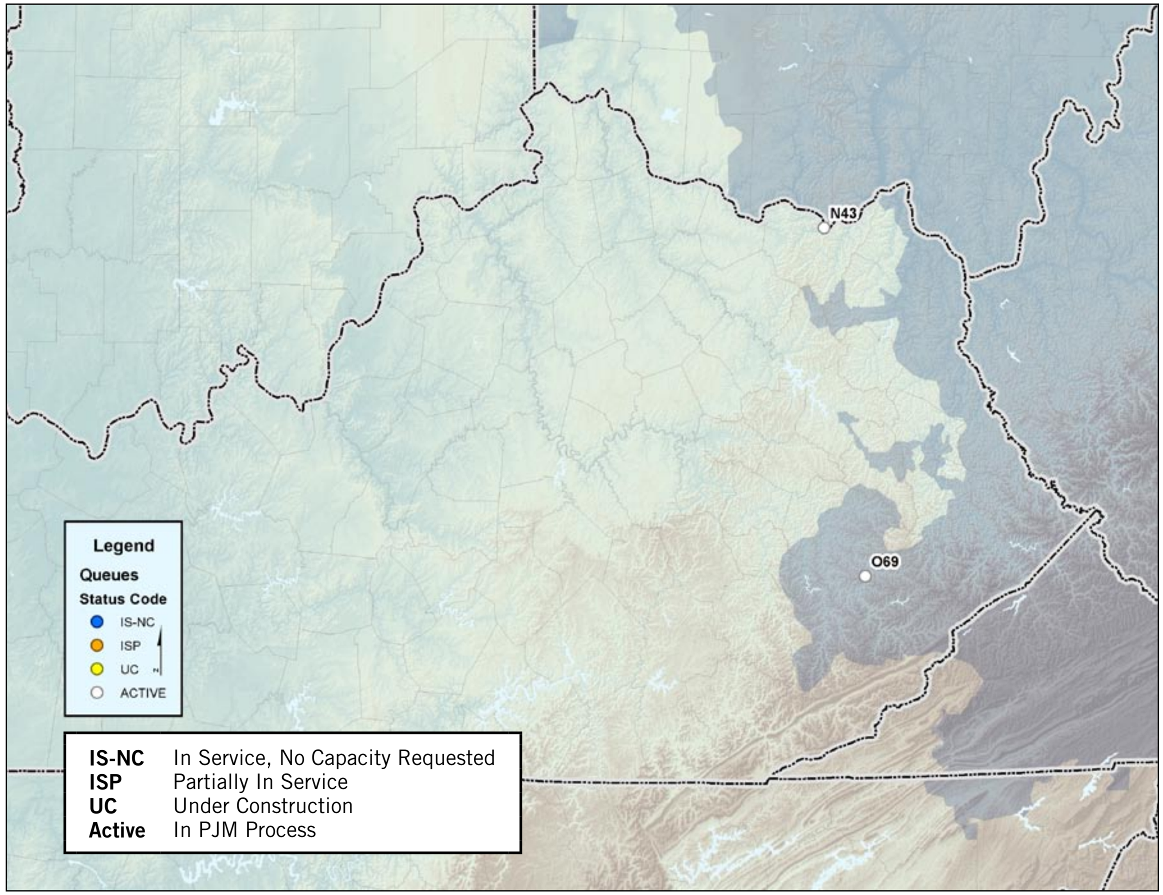


Table 4.4.1-1: Eastern Kentucky Generating Resource Interconnection Requests

Queue	Project Name	MW	MWC	Status	Schedule	TO
N43	Hanging Rock-Jefferson 765 kV	1200	1200	ACTIVE	5/1/10	AEP
O69	Beaver Creek-Hazard 138 kV	535	535	ACTIVE	7/1/09	AEP

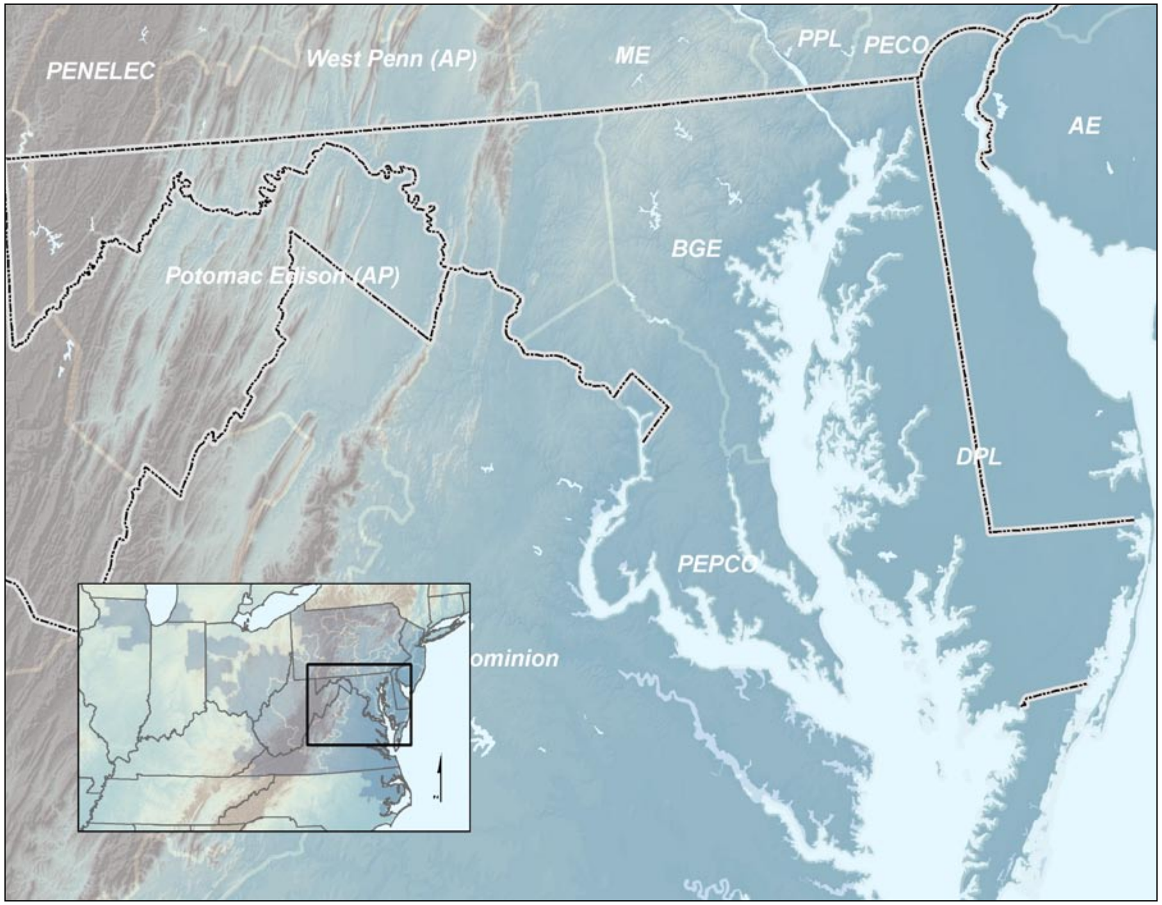
PJM DE DC IL IN KY MD MI NJ NC OH PA TN VA WV

Section 4.5: Maryland and District of Columbia RTEP Overview

4.5.1 – Load and Generation

PJM operates the electric transmission system of the Transmission Owners in Maryland and D.C. Potomac Electric sub-zone of Allegheny Power (AP), Baltimore Gas and Electric Company (BGE) and Potomac Electric Power Company (Pepco) as shown in **Map 4.5.1-1**. The transmission system provides electric delivery service to customers in the State of Maryland and D.C. and also transmits energy from west of Maryland to major load centers throughout Maryland, D.C. and other PJM areas north and east as suggested by the area's electrical topology in **Map 4.5.1-2**.

Map 4.5.1-1: PJM Load Zones in Maryland and District of Columbia.



Load Growth

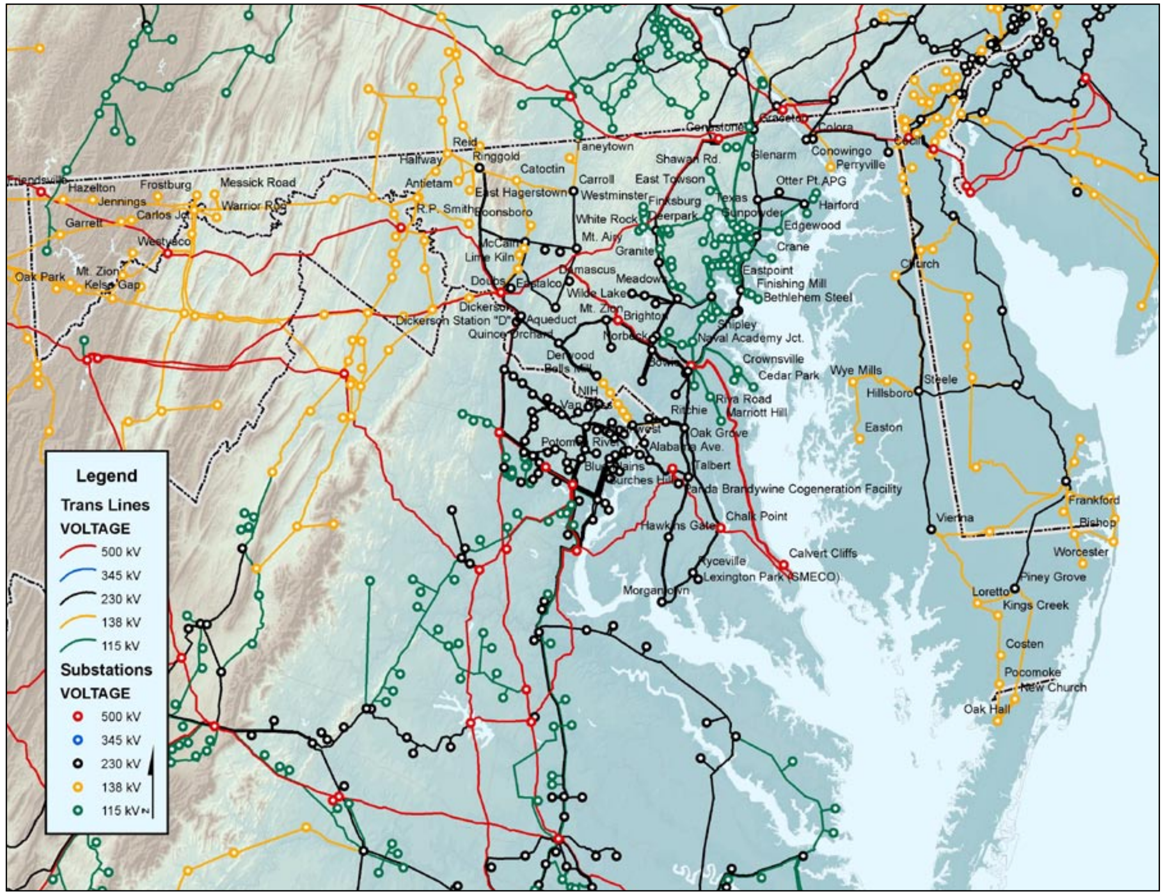
The forecasted 2005 summer peak load served in Maryland, D.C. and a portion of northern Virginia was 16,377 MW and is forecasted to grow at an annual rate of 1.7 percent over the next 10-year period, reaching 19,316 MW by the summer of 2015.

The forecasted 2004/05 winter peak load served in Maryland, D.C. and a portion of northern Virginia was 14,549 MW and is forecasted to grow at an annual rate of 1.7 percent over the next 10-year period, reaching 17,225 MW by the winter of 2014/15.

The forecasted loads cited above were modeled in the power flow studies used to develop PJM's RTEP through December 2005.

The existing transmission system in Maryland and D.C. is currently planned to be reinforced to meet expected 2009 peak load conditions. Beyond 2009, additional transmission system expansion will be needed to meet expected peak load supply requirements.

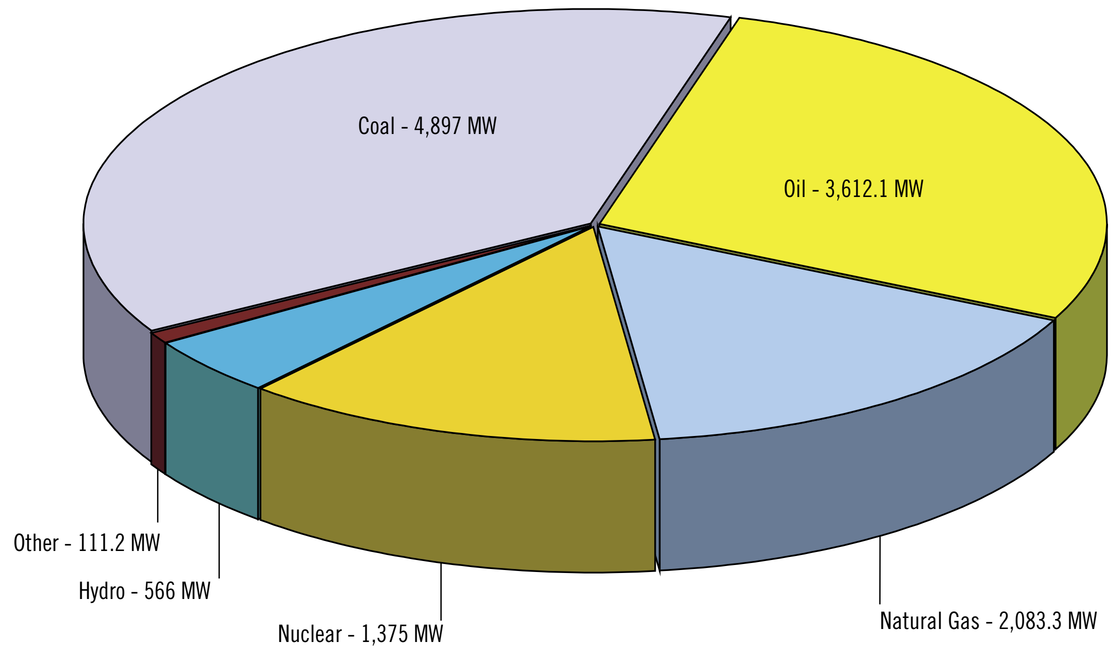
Map 4.5.1-2: Maryland and District of Columbia Transmission System



Existing Generating Capacity

Figure 4.5.1-1 provides a snapshot of the existing installed capacity by fuel type in the Maryland and D.C. area.

Figure 4.5.1-1: Existing Installed Capacity by Fuel Type in Maryland and the District of Columbia



New Generator Interconnections

Status	# of Projects	MW
In-Service	18	1249
Under Construction	3	124
Active (Under Study)	7	757
Withdrawn	42	20312
TOTAL	70	22442

Figure 4.5.1-2 shows the capacity rights requested, by fuel type, for those interconnection requests in Queue A through Queue P that are in-service, under construction or active in PJM's interconnection process as summarized in the table above.

Figure 4.5.1-2: Capacity Rights by Fuel Type for Queued Generation Interconnection Requests in Maryland and the District of Columbia

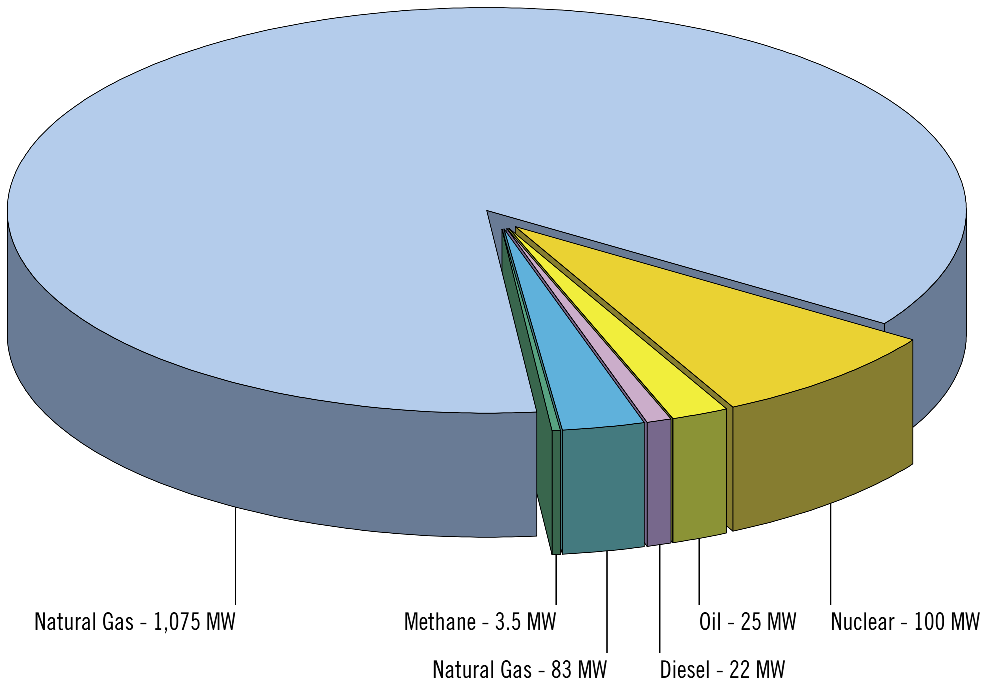
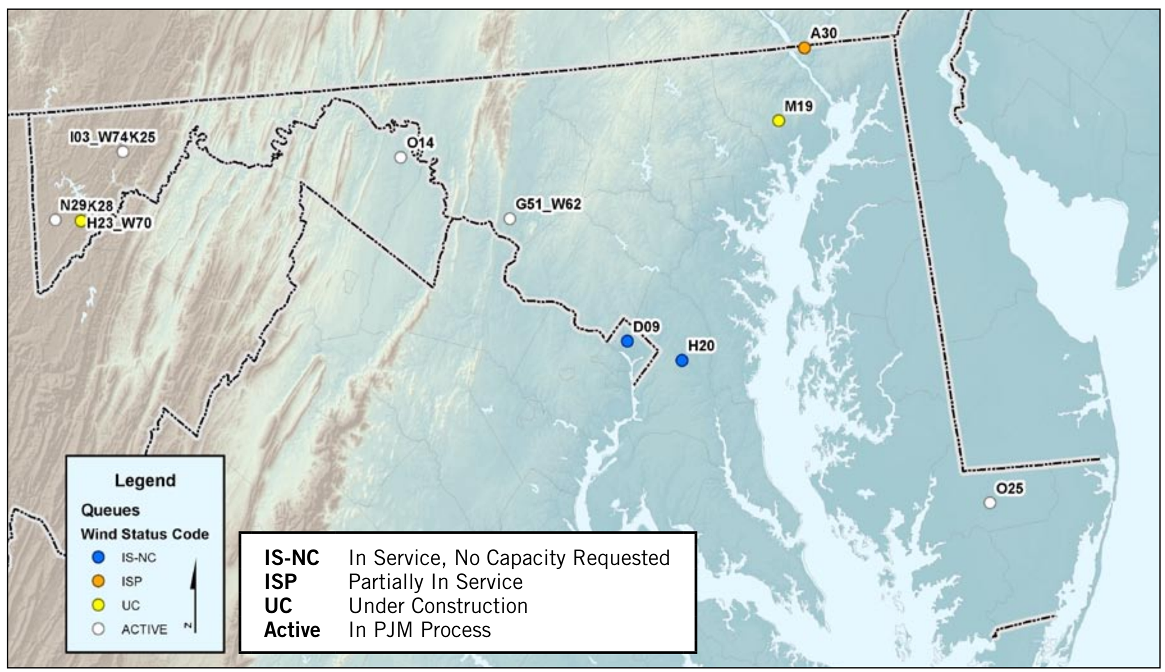


Table 4.5.1-1 includes queued generation interconnection requests in Queue A through Queue P that are under construction or active in PJM's Interconnection Process. **Map 4.5.1-3** shows the location of each queued request in the Table. A status code of "IS-NC" or "ISP" denotes a generating resource that is in-service but has not achieved full capacity status. Resources fully in-service (designated "IS") are included in the earlier summary tabulation, but are not separately enumerated in the expanded **Table 4.5.1-1**

Table 4.5.1-1: Generation Interconnection Requests for Maryland and D.C.

Queue	Project Name	MW	MWC	Status	Schedule	TO	Fuel Type
A30	Colora Tap	465	465	ISP	12/1/05	DELMARVA	Natural Gas
D09	9th St (sub 117) 13 kV	10		IS-NC	6/1/04	PEPCO	Natural Gas
G51_W62	Eastalco 230 kV	640	640	ACTIVE	6/30/09	AP	Natural Gas
H20	Oak Grove 13.8 kV	3.5		IS-NC	12/31/03	PEPCO	Methane
H23_W70	Kelso Gap 138 kV	100		UC	12/31/05	AP	Wind
I03_W74	Savage 138 kV	40		ACTIVE	12/1/07	AP	Wind
K25	Savage 138 kV	8	8	ACTIVE	6/1/06	AP	Wind
K28	Kelso Gap 138 kV	19.8	19.8	UC	12/31/05	AP	Wind
M19	Otter Point	4.5		UC	1/31/06	BGE	Methane
N29	Roth Rock 138 kV	40	8	ACTIVE	12/31/07	AP	Wind
O25	N. Salisbury 25 kV	6	6	ACTIVE	3/6/06	DELMARVA	Methane
P32	White Oak	13.5		ACTIVE	12/31/07	PEPCO	Natural Gas
P41	South Reading - Birdsboro 69 kV	9	9	ACTIVE	9/30/06	METED	Methane

Map 4.5.1-3: Location of Queued Generation Requests in Maryland and the District of Columbia



4.5.2 – Transmission Expansion Plans

Table 4.5.2-1 and **Map 4.5.2-1** summarize the planned transmission upgrades presently in PJM's RTEP for the Maryland and the District of Columbia area. As the table notes, drivers of such upgrades include baseline reliability, generator deactivation and TOI-based local reliability issues.

Map 4.5.2-1: Location of Queued Generation Requests in Maryland and the District of Columbia

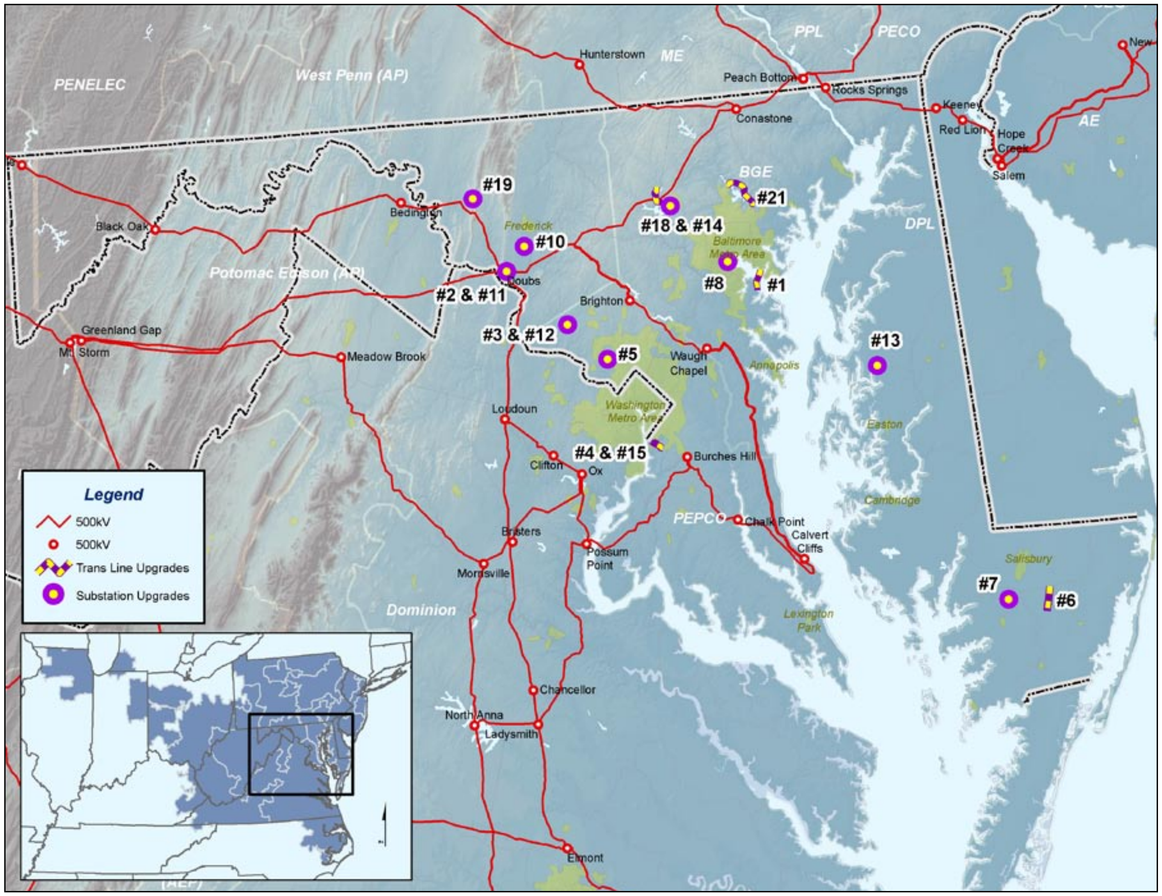


Table 4.5.2-1: Major RTEP Upgrades for Maryland and the District of Columbia

		System Upgrade Drivers: Baseline Upgrades				Network Upgrades		TOI Upgrade	Transmission Service				
Map Ref.	**Constraint** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
1	**Brandon Shores-Riverside DCTL to eliminate MAAC 2C Violation**											BGE	MD
	New 230 kV Tower Line	X								January 2007	$ 7 M	BGE	MD
2	**Doubs 500/230 kV Transformer**											AP	MD
	Replace Doubs 500/230 kV Transformer #1	X								June 2006	$ 4.1 M	AP	MD
3	**Quince Orchard substation 230 kV Circuit Breakers**											PEPCO	MD
	2 new 230 kV circuit breakers at Quince Orchard substation on circuits 23028 and 23029	X								June 2006	$ 3.9 M	PEPCO	MD
4	**Palmers Corner, Blue Plains Area Overloads**											PEPCO	MD
	Install two new 230 kV circuits between Palmers Corner and Blue Plains	X			X					May 2007	$ 70 M	PEPCO	MD
5	**Piney Grove - Mt. Olive Circuit**											DPL	MD
	Piney Grove to Mt. Olive (6729) Rebuild							X		May 2009	$ 2.12 M	DPL	MD
6	**Loretto 138/69 kV Transformers**											DPL	MD
	Loretto AT-1 and AT-2 138/69 kV Replacements							X		May 2009	$ 2.8 M	DPL	MD
7	**Westport 115 kV Switching Station**											BGE	MD
	Build a new 115 kV switching station at Westport							X		June 2007	$ 42 M	BGE	MD

Table 4.5.2-1: Major RTEP Upgrades for Maryland and the District of Columbia, Continued

		System Upgrade Drivers: Baseline Upgrades				Network Upgrades		TOI Upgrade	Transmission Service				
Map Ref.	**Constraint** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
8	**Wattsville 138/69 kV Transformer**											DPL	MD
	Wattsville- Add a 138/69 kV autotransformer (200 MVA)							X		June 2009	$ 2.88 M	DPL	MD
9	**Lime Kiln 230 kV Substation**											AP	MD
	Install 230 kV bus with three 230 kV breaker terminals and eliminate #207 230 kV line junction							X		April 2006	$ 3.04 M	AP	MD
10	**Doubs Substation**											AP	MD
	Replace substation control building at Doubs Substation							X		November 2008	$ 3.97 M	AP	MD
11	**Quince Orchard 230 kV Circuit Breakers**											PEPCO	MD
	Installation of two additional 230 kV circuit breakers at Quince Orchard substation on circuits 23030 and 23031							X		June 2010	$ 3.5 M	PEPCO	MD
12	**Wye Mills 138/69 kV Transformer**											DPL	MD
	Wye Mills - 2nd 138/69 kV auto (200 MVA)							X		December 2010	$ 3.15 M	DPL	MD
13	**Northwest - Finksburg Circuit and Northwest Circuit Breaker**											BGE	MD
	Rebuild approximately 3.4 miles, from Northwest to Finksburg tap(110572) from single circuit to double circuit; install breaker at Northwest							X		December 2008	$ 3.5 M	BGE	MD

Table 4.5.2-1: Major RTEP Upgrades for Maryland and the District of Columbia, Continued

		System Upgrade Drivers											
		Baseline Upgrades				Network Upgrades		TOI Upgrade	Transmission Service				
Map Ref.	**Constraint** / Upgrade Description	Baseline Load Growth/ Deliverability & Reliability	Congestion Relief – Economic	Operational Performance	Generator Deactivation	Generation Interconnection	Merchant Transmission Interconnection	TO – Local Issue	Long-term Firm Transmission Service	Date / Status	Cost	TO Zones	States
14	**Palmers Corner - Blue Plains 230 kV Circuit**											PEPCO	MD
	Install two new 230 kV circuits between Palmers Corner and Blue Plains	X								May 2002	$ 70 M	PEPCO	MD
15	**Wilkins 115 kV Substation**											BGE	MD
	Build a new 115 kV distribution substation at Wilkins with two cables feeding the station						X			June 2010	$ 13 M	BGE	MD
16	**BGE Reactive Support**											BGE	MD
	BGE Reactive Upgrades	X								June 2004	$ 9.12 M	BGE	MD
17	**Northwest 230/115 kV**											BGE	MD
	Replace Northwest 230/115 kV transformers with 500 MVA transformers	X								May 2003	$ 9.06 M	BGE	MD
18	**Boonsboro 230/138 kV Transformer**											AP	MD
	Boonsboro Substation - install 230-138 kV Transformer							X		September 2004	$ 6.41 M	AP	MD
19	**PEPCO Reactive Support**											PEPCO	MD
	PEPCO Reactive Upgrades	X								June 2005	$ 5.83 M	PEPCO	MD
20	**Windy Edge - Texas 115 kV**											BGE	MD
	Increase emergency rating of Windy Edge - Lakespring - Texas 115 kV	X								to be determined	$ 3.77 M	BGE	MD

4.5.3 – Other Related RTEP Initiatives

Wind Generation Projects

Wind farm projects generally develop in those geographic areas with favorable wind frequency and duration characteristics where economical levels of wind generation may be expected. Such favorable areas are found in the mountainous areas of western Maryland as shown in **Table 4.5.3-1** and on **Map 4.5.3-1**. Please reference Section 3.6 for more specific discussion of wind generation activity.

PJM West to East transfers

Please reference Section 3.3 for detailed discussion regarding expansion plans for the transmission corridor of western Maryland, northern West Virginia, northern Virginia, eastern Ohio and southwestern Pennsylvania. The ability of Maryland-based LSEs to import energy depends on the transmission capability in this area.

Map 4.5.3-1: Map of Maryland and D.C. Wind Generation

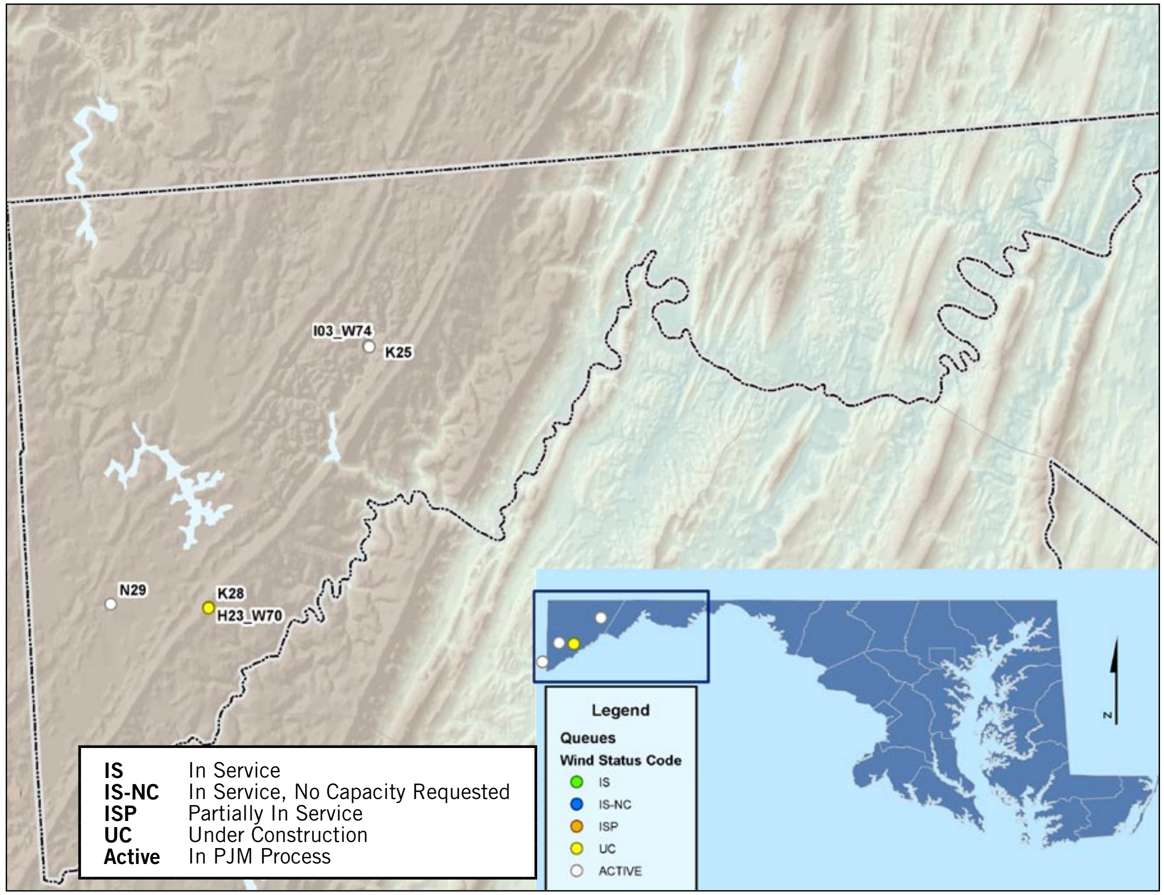


Table 4.5.3-1: Maryland and D.C. Wind Generation

Queue	Project Name	MW	MWC	Status	Schedule	TO
H23_W70	Kelso Gap 138 kV	100		UC	12/31/05	AP
I03_W74	Savage 138 kV	40		ACTIVE	12/1/07	AP
K25	Savage 138 kV	8	8	ACTIVE	6/1/06	AP
K28	Kelso Gap 138 kV	19.8	19.8	UC	12/31/05	AP
N29	Roth Rock 138 kV	40	8	ACTIVE	12/31/05	AP